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Diving & Snorkeling

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Illustration by Tom A. Russell

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Editor's Page

Illustration by Tom A. Russell

The winter dive-travel season is at its peak, and the more popular Caribbean destinations are gunwale to gunnel not only with divers but with everyone trying to escape the dreaded wind chill factor of the snowy North. No sport surpasses diving in the amount of travel done by its participants, especially foreign travel. But for the same reason I enjoy the beach more in November than July, I like the Caribbean more in June than January. In January I'm as desperate as anyone to escape the cold; I just don't want to join the crowd to do it.

There is a solution. Go to the more popular dive destinations in spring or summer and to the out-of-the-way places in winter. In every issue of SCUBAPRO Diving & Snorkeling, we feature several dive destinations. Some are in the States, but most are out of the country. Although we give the major resorts ample coverage, the off-beat spots aren't ignored. In the recent past, articles have appeared on Venezuela's Puerto La Cruz and Margarita Island, Turneffe Island and Anguilla. For this issue, Tom Campbell traveled to Dominica, a jewel of an island tucked between Martinique and Guadeloupe. Tom reports on the island's tropical beauty and unspoiled diving on page 40. Be sure to book early as there are two dive operators on the island, and last year only about 350 divers could be accommodated.

The Galapagos Islands are another destination where hotels will never blot out the beach. Eric Hanauer visited these extraordinary islands last summer and thankfully announces on page 52 that under the stewardship of the Ecuadorian government, nothing has changed since we last covered them five years ago.

Of the easily accessible, more popular destinations, Cozumel is featured on page 44. Tim O'Keefe revisited this Mexican resort island after a 12-year hiatus to find the diving to be as good or better than he remembered. Cozumel has been getting some bad ink of late about the laxity of some of its dive operators. A group of them have organized and established strict procedures for all to follow in hopes of correcting their image problem pronto.

Stateside, Herb Segars takes us along on a highly unusual beach diving experience. Herb traveled to Maine's Bay of Fundy just to dive where the tide rises and falls up to 30 feet. Herb reports on page 8 that you'd better not try it without a set of tide tables because it can be a long walk back to the car if the tide goes out before you get ashore.

For those who want to escape the cold but without leaving the States, Linda Reeves offers a tour of Florida's top snorkeling areas beginning on page 36. With a car and a camper and mask, fins and snorkel, a family can enjoy a great winter escape without breaking the budget.

Whatever your winter travel plans, we wish you the best and safest of diving.

Edward Montague



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The Urge to Surge



A northern basket star extends some of its many legs in search of food. The sea peach, center, is a turnicate. The largest specimens are found in the Arctic. The East Quoddy Head lighthouse is located on Campobello Island.

Have you ever wanted to visit a place you know very little about? A place whose name or reputation intrigues you to the point that you place visiting it high on your priority list? A favorite of mine is Katmandu, in Nepal. I have never been there, but have seen pictures in magazines and on television. Yet I find the name fascinating. My imagination runs wild when I try to envision what this exotic place must look like. Maine—primarily its seacoast—has the same effect on me. With most of our dreams, our priorities in realizing them are often determined by their affordability.

For as many years as I can remember, my wife and I have talked about visiting Maine, but our diving priorities usually kept us much farther south. In the last few years, I have decided to concentrate my underwater photography in the waters north of the Carolinas. When it came time to plan our summer vacation, Maine was number one on our list. We knew nothing about the state, other than the information we could glean from books or see on maps. We knew even less about diving along its coast.

Fortunately, a couple we had met years ago, Dr. Bob Leahy and his wife, Donna, owned a bed and breakfast in Eastport, Maine. Eastport is about as far north as you can get on the Maine coast before hitting the Canadian border. It is the easternmost city in the United States, and was once known as the center of the sardine industry. After the decline of the sardine industry, Eastport emerged as an important deep-water seaport servicing transatlantic shipping into eastern Maine. We thought it would be an ideal place for our first visit to the land of tremendous tides and a never-ending flow of seafood.

The first fact we discovered about Maine was that it is much bigger than we'd imagined. The first leg of the journey from our home in New Jersey to the Maine border was a six-hour drive. That was easy enough! We had made longer drives to dive in North Carolina. The size of the state was evident on our backsides when we arrived in Eastport, six hours after crossing the Maine border.

Herb Segars lives close to the New Jersey coast and often writes about and photographs the wrecks lying off her shore.

BY HERB SEGARS

Twice a day the tides in the Bay of Fundy rise and fall almost 30 feet. "Mainiac" divers find the conditions ideal for beach diving.



Radical tides leave boats high and dry unless floating docks are used.

Just over the border we were introduced to the shopping outlets of Kittery, Maine. For those who love to shop, a stop here is a must. There are factory outlets for clothes, toiletries, shoes, and sporting goods. . . just to mention a few. The bargains were great, and we lightened our wallets considerably.

As we traveled north of Acadia National Park, which is halfway up Maine's coast, the number of hotels and motels diminished. Overnighting is done at bed and breakfasts, a type of accommodation we'd never experienced before

this trip. These are large rooming houses where guests are provided with a bedroom for the night, which may or may not feature a private bath. Included in the cost is breakfast the next morning. Other amenities, such as those provided by Bob and Donna Leahy, are optional.

For around \$60 a night we enjoyed a wonderful room with private bath, a gourmet breakfast at 8:30 every morning, hot coffee from 7 a.m., and mid-afternoon cookies, cakes, and tea, coffee or sherry. Each evening, our bed was



A northern red anemone is found from the Arctic to Cape Cod.

turned down, an after-dinner mint placed on our pillow and an after-dinner drink on the nightstand. I cannot testify that the same hospitality is available at every bed and breakfast, but Bob and Donna's was certainly a highlight of our trip.

Bob Leahy is an accomplished underwater photographer who spends his summers tending to the Inn at Eastport and diving in the waters of the Bay of Fundy. He was my guide during a week of beach diving. We managed one dive every day in the 50-degree water. I had brought both a wet suit and a dry suit, but never worked up the nerve to remove the wet suit from its bag. The

The common periwinkle is found from Labrador to Maryland and is the most common snail found in the intertidal zone of the Northeast.



water temperature remained a constant 50 degrees throughout the week. There was no thermocline from the surface to our deepest depth of 90 feet.

There are two drawbacks to diving the upper reaches of Maine. First is the lack of availability of diving services such as air fills. Bob had a compressor that made our refills a snap. Unfortunately, during this past winter, Bob sold the Inn and the compressor is no longer there. Others who came in during the week brought enough tanks for their entire diving stay. Instead of carrying tanks from home, it might be more convenient to rent tanks from a dive shop elsewhere in Maine, returning them on your way home. When I return to Eastport, I will bring 100-cubic-foot tanks with me. I believe that I can get two dives from each tank, which will minimize the number of tanks I must transport.

A second drawback is the tide. In the Bay of Fundy, the tide rises and falls from 18 to 27 feet during a six-hour period. The movement of this huge volume of water creates currents up to seven or eight knots. This may sound like a real disaster for beach diving, but I found it to be no more difficult than diving in an inlet at home. It is important to follow a few commonsense suggestions, though. First, dive at slack tide. I entered the water about 20 minutes before dead slack tide and had about 45 minutes in the water. (In Eastport, peak high and low tide times are listed in the local newspaper, *The Quoddy Tides*.)

It doesn't matter whether diving is done at high or low tide. The difference at low tide is a longer trek to the water-

line, sometimes over slick rocks. It was interesting comparing dives at high and low tide at the same location. Bob and I visited a wolffish at high tide, finding it at 90 feet. We returned at low tide and found him in the same place, at 65 feet.

A second point to remember is to follow the bottom back to shore after your dive. If you surface to get your bearings, be careful of the current. You may be better off returning to the bottom to continue your exit. The surface water moves fast, and it can carry you away from your exit point. I found this out on my first dive behind the cannery in Eastport. I became disoriented toward the end of the dive and surfaced to see where I was. The current carried me about 200 feet down the beach before I could swim the 75 feet to shore. I never repeated that mistake.

What is so attractive about diving in the upper reaches of Maine? For me, it is the marine life, my photographic specialty. I was hoping to find some new and exciting subjects, and I wasn't disappointed. I found fields of northern red anemones, multi-colored flower-like marine invertebrates. Interspersed among the reds were frilled anemones, the most common species in my home state of New Jersey. At the southern end of downtown Eastport is the old cannery. My dives behind the cannery were kept to about 35 feet while Bob, who was familiar with the area, ventured deeper. This was home for northern basket stars, red soft coral, moon snails, sea peaches and the ever-present periwinkle snail. It was also a good place to find old bottles.

Back in New Jersey after the trip, my wife and I were looking at slides. She asked why I had not retrieved the bottle visible in a particular photograph. I'd never seen it! I'd been so wrapped up in taking the picture that I missed the bottle completely. I think the only way I'll ever find artifacts is if they hit me on the head.

It was at the cannery that I had my first experience with the Atlantic wolffish, a ferocious-looking marine animal. Those I saw during my week's stay were tucked into holes in the rocks, and I never had the chance to photograph one easily. Just a look at their choppers kept me from attempting to lure one out into the open. I'll feel braver on my next trip.

Coming from a state where lobster hunting is extremely popular, I found it very difficult to photograph the monster bugs in Maine. They knew just as well as I that I could not bring them home to (for) dinner. I thought I heard a few of them chuckle as I swam away. A deep laugh seemed to come from one specimen that weighed about 15 pounds.

(Please turn to page 76)

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Sea stars, opposite, await the incoming tide while a small red shore crab ambles over a bed of aggregating anemones. Photographer takes an overhead shot of a tide pool.

Until recently, I knew little about "tide pooling." It was something like bird watching, I assumed, except it gave you a stiff neck from looking down instead of up.

Now that I'm a veteran prowler of the intertidal byways, I can vouch for the sore neck...and, I'm unhappy to add, cold, wet feet, a sniffly nose, blue hands, and legs that collapse like a folding chair when I try to stand up after hours of crouching, kneeling and crawling.

But there are compensations, not the least of which is that as a warm water, fair-weather diver, I can nevertheless enjoy photographing cold-water marine creatures while submerging only my hands, and rarely (reluctantly) my feet.

Before I knew much about marine life, I'd find myself on some rocky shore by chance at low tide, staring into pools

A tide pool is a perfect environment to photograph marine life without getting wet!

logical intensity, I've become equally determined to capture it on film.

Those divers with access to rocky coasts, where intertidal life is most colorful and abundant, need not let their trusty underwater photo equipment gather dust on the shelf all winter just because conditions for scuba diving are unfavorable. A Nikonos with a small flash and close-up attachments is the perfect system with which to approach intertidal animals. (A strong back helps too.)

But even the most sophisticated equip-

Shore Shots

A Guide to Tide Pool Photography

BY NANCY SEFTON

and surge channels, broadcasting my ignorance verbally. "Comeer and see this neat thingamajig with all the legs! Hey, this purple creepy-crawly is eating a green watchamacallit!"

Time and experience have taught me much: I now know what the purple creepy-crawlies are, and even why they eat those green whatsits.

There's a lot more going on than predation alone, in these nondescript little pools. Their Lilliputian occupants are busily engaged in self-defense, cooperation, even reproduction (right in front of a human audience). As I've become more fascinated by all this bio-

ment won't give you those great shots unless you know when and where to go, as well as a little about the intertidal zone and its fascinating residents.

Twice every 24 hours, the gravitational forces of the sun and moon pull upon the sea, alternately exposing and recovering a narrow coastal margin. Where this margin consists of broad, rocky shelves, the low tide exposes pools, cracks, crevices and channels which retain enough sea water to allow marine creatures to survive even the rare "minus tides" that occur in spring and fall.

At first, the special habitat uncovered at low water appears rather chaotic. Animals representing every biological group found on earth seem strewn along the exposed shore in a haphazard manner. Thick carpets of colorful seaweeds

smother the rocks; orange, red and purple starfish seem glued to the sides of surge channels below black and white bands of barnacles and mussels; anemones seem to blossom like giant daisies from the bottoms of darkly glinting pools.

In reality, a carefully managed pattern exists here; Mother Nature has things under control.

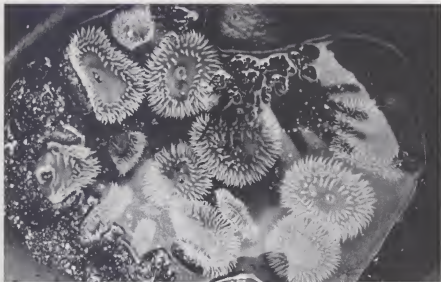
First, intertidal animals, although they could live comfortably in deeper waters, are nevertheless attracted to this narrow corridor where land and sea meet, for one very important reason: they have special defenses and adaptations allowing them to survive in this tough neighborhood, one carefully avoided by other creatures.

Intertidal inhabitants must withstand



Nancy Sefton is a free-lance writer and underwater photographer who has lived on Little Cayman Island for the past 18 years.

Coastal areas experiencing the most wave action are likely to teem with life.



Green sea anemones crowd a small pool. Photo was taken from above the pool.

wide temperature and salinity variations, periodic drying, hot sun, and worse, the impact of tons of water at regular intervals. In nature, competition for living space is fierce. No niche goes unoccupied, no matter how hostile the surroundings.

These cruel conditions necessitate special defenses such as tough armour, sharp spines, clinging feet, or perhaps strong filaments for tenaciously hanging on. Even the shape of a shell may provide an advantage in the fight for survival.

Coastal areas experiencing the most wave action are also the most likely to teem with life; waves bring oxygen and food, remove wastes and keep the environment moist.

Intertidal creatures make their living in a variety of ways: filter-feeding, grazing on algae, scavenging, gobbling, crunching, scraping, and in the case of the voracious sea star, injecting one's rather mobile stomach between the shells of a luckless mussel.

Animals forever stuck in one spot, like barnacles and plume worms, obviously benefit from the ability to filter-

feed—to extend feathery appendages which capture microscopic tidbits carried to them by changing water. Predators like the tidepool sculpin, a tiny fish with an endless wardrobe, change body patterns to match their backgrounds. Invisible, they lunge at their prey, apparently coming from nowhere.

Scavengers such as crabs and shrimps scurry across the bottom of the pool, cleaning up nature's refuse.

Intertidal life can start as high as 30 feet above sea level. As long as an occasional splash wets the area, animals such as the barnacles can hang in there. Beneath them are the mussels and below these live the encrusting sponges, anemones and sea urchins. Climbing at will across all these zones is the agile sea star, the Jesse Owens of the intertidal zone.

Sea stars are perfectly equipped to deal with forces bent on dislodging them from the rocks. With their multitude of tube feet ending in tiny suction cups, they cling so effectively that even if the tube feet are torn from the body, they may adhere to the rocks for several hours. A star is able to grip its prey,

usually a mussel, pry open the two shells, and thrust its stomach into the narrow opening to feast on the soft parts.

Mussels attach themselves to the rock substrate with byssal threads, fibers they secrete with special glands. Mussels grow so thick they must orient themselves vertically in this crowded, "standing room only" community.

The sea urchin has made perhaps the most interesting adaptation to the tide pool environment. Many species appear half-hidden in perfectly sculpted hollows. The urchin leaves nothing to chance, excavating its own niche by scraping at the rock with its spines and hard teeth.

At the lower levels of the intertidal strata, exposed sea anemones, their rather heavy bodies no longer buoyed by water, droop and sag forlornly, tentacles retracted. Once submerged again, they blossom as the tentacles unfold. These flower lookalikes, however, are really fearsome carnivores.

Lightly touching the tentacles of a sea-grown anemone, my finger encounters the characteristic sandpaper-like grab as a myriad of microscopic darts are fired into my skin. Non-toxic to me, this aggressive weaponry is lethal to the anemone's prey.

A small hermit crab waddles idly across the placid oral disk of the anemone. The crab's leg brushes a single tentacle and suddenly the tiny crustacean is literally shocked out of its borrowed shell. Before it can scamper away, it is paralyzed, enclosed in tentacles and drawn into the anemone's gut cavity to be digested.

The true Methuselahs of the intertidal zone, sea anemones have reached the ripe old age of 80 in laboratories. Biologists believe that if left undisturbed in their natural environment, anemones could well live for several hundred years. So when you encounter large anemones, be respectful of your elders!

When you've had your fill of the larger intertidal residents like the sea stars, anemones and shellfish, look closer for the little guys: the snails, tube worms, hermit crabs and tiny fish. Each tide pool is a melting pot, harboring a few individuals from every animal group. And about half of them are intent on gobbling the other half.

But in nature there are interdependencies too. For example, a hermit crab carries anemones on its shell. The anemones with their stinging arsenals protect the hermit, while the host offers free transportation. Inside the hermit's shell there may live a brittle star that keeps the interior clean and in turn feeds on the hermit's leftovers. The shell itself once belonged to a deceased snail.

To photograph this intertidal menagerie, some planning is called for. Obtain

a set of local tide tables and plan your trip for a period when low tides (up to a +5) occur during daylight hours. Depending on tide level and the coastal landscape, you can work for about four hours straddling low tide. Choose a working "pathway" that puts you at the outer edges of the exposed area during lowest water, then follow the tide back in and work among the higher exposed zones.

Patience is definitely a virtue. Choose a bare space on the rocks and sit down by a tidepool, remaining very still. As soon as your presence no longer intimidates the tiny residents, they will begin to move, resuming their normal activities. I once had my patience amply rewarded by a large red octopus which rose to the surface of a surge channel six feet away, and began probing the exposed rockweed for prey.

Besides a Nikons system, an above-water camera, macro lens and flash are handy when photographing animals completely exposed by low water. The flash helps to bring out bright colors on a cloudy or foggy day. Since salt spray is damaging to photo equipment, it's wise to keep terrestrial cameras in a plastic bag until they are needed.

As you approach the intertidal zone with your photo gear, contemplate the whole picture: the tidal cycle itself. If you can remain in one area for half a day, shoot a scene at low water, then take the same picture when the tide is high.

Always look for color in the exposed seaweeds, bright sea stars, urchins, anemones, nudibranchs and tube worms. Even drab-colored hermit crabs may have blue-tipped legs.

So many different-sized subjects wait below the placid surfaces of tide pools, that it is smart to bring along several macro set-ups, from one-inch framers and their extension tubes, up to the 7- to 9-inch framers that accompany the Nikons close-up outfit. All of these systems use 35mm and 28mm lenses.

Working below the surface of a pool is not as easy as it may seem. You are looking into a dim area. The smaller-format macro systems allow a very narrow depth of field. For this reason, framers must be placed very carefully for sharp focus. Always remember to immerse the extension tube and the front of the lens totally (the camera body need not be submerged). For best results, the front of your flash should also be lowered into the water.

When using a flash system that requires you to set exposures manually, note that most intertidal animals are dark colored and non-reflective. I generally open the aperture a full stop more than normal, to avoid underexposing the subject. When in doubt, bracket (take several shots of the same creature,

using different exposures).

With your above-water camera, avoid photographing a subject through more than an inch of water. Reflections can obscure whatever creatures lie on the bottom of the pool. Similarly, an above-water flash should not be used if the subject is submerged, or the photo is likely to feature the bright reflection of the flash head.

Wait quietly by one pool and look for photo opportunities, rather than dashing from one spot to another grabbing a shot here, a shot there. There may be dozens of subjects in a single pool or channel, overlooked by the photographer in a hurry.

An individual intertidal resident can be approached in several different ways. For example, a sea star can be used as a colorful foreground subject in a wide-angle shot of the shoreline at low tide. A closer angle, featuring the star as the main subject, can be followed up by a macro photo of the star's surface, or of its tube feet as it creeps over the rocks.

Be reminded that any creature moving quickly, such as the sculpins and hermit crabs, may yield blurred pictures. I've found that when I submerge my close-up system into a pool and leave it motionless, the animals soon become accustomed to its presence. Tidepool sculpins are extremely curious, and will even plant themselves in the framer.

No subject should be overlooked; one of my favorites is the lowly seaweed—even the uprooted fragments. On beaches or rocks, piles of torn algae may yield an artist's palette of colors, creating an engaging impressionist study.

A small cushion or knee pads makes it possible to kneel on hard rocks for longer periods. Ideal footwear is either old tennis shoes or the rubber booties worn by divers and surfers. Since coastal weather can change abruptly, it's wise

to dress in layers and bring rain gear.

Intertidal etiquette requires moving carefully to avoid stepping upon fragile inhabitants such as seaweeds and barnacles. Tide pool creatures are best observed and photographed in their natural surroundings, not removed. Overturning rocks exposes delicate creatures that may die from exposure.

Some photographers, in their zeal to obtain that perfect picture, foolishly try to improve on nature. I watched a fellow tidepool camera buff patiently remove the bits of seaweed stuck atop a purple urchin in order to get a clear shot of the subject. He didn't know that the urchin intentionally draws algae over itself like a parasol, for protection from hot sun. With the weed intact, it was an interesting behavioral study; without the weed, it was a biologically inaccurate photo. More important, by the time the urchin painstakingly repositioned its protective algae, the creature may have suffered from exposure.

For safety's sake, always keep an eye on the sea. Occasional high waves can be dangerous. Before I venture to the far edges of the exposed zone, I study the waves to make sure that I and my non-waterproof camera equipment won't be subjected to a dunking. To avoid being trapped by the incoming tide, wear a watch and carry an accurate tide table for the area.

Now that I'm a regular visitor to the intertidal zone, those purple whatits are no longer off limits to me just because they live in frigid water. Low tide will find me crawling around the edges of pools and surge channels, soaked and shivering, refusing to quit until the cold waves start licking at my feet.

Stiff neck and aching back aside, I may just be rewarded with a few good photos, and a lot of new insights into the workings of the marine ecosystem. **S**



A small moon snail shell lies among seaweed fragments tossed onto the rocks.

*The cold waters of Lake Huron
have preserved the Dunderberg
in near-perfect condition.*

*A schooner of the
type that sailed on
the Great Lakes rests
at anchor. Diver
examines block and
tackle on the
Dunderberg which
appears to be in
working condition
even after 122 years
of submersion.*

Frozen in Time

BY GARY GENTILE

The *Flying Dutchman* was a ship that attempted to sail around the Cape of Good Hope in the teeth of a gale. Repeatedly beaten back by the wind, according to legend her captain swore he would not give up until he made good his passage, even if he spent eternity trying.

Satan took the captain's oath literally. Ever since, the *Flying Dutchman* has been forced to tack off South African shores in an endless effort to round that lonely headland. As tradition has it, superstitious sailors have occasionally glimpsed the *Flying Dutchman* through storm-swept clouds as she sails on forever at the Devil's command.

Gary Gentile is a lecturer and free-lance writer with extensive Atlantic wreck diving experience. He is the author of *Andria Doria: Dive to an Era*, and the *Popular Dive Guide Series* on shipwrecks off the East Coast.

Wretched sea conditions can be expected whenever the accursed ghost-ship is spotted.

The majestic days of tall ships under sail are history. The few that survive do not engage in commerce but are training or exhibition ships, museums, or floating restaurants. Those who serve before the mast do so in style and with confidence that, in dire straits, they can be lifted off the holystoned decks by a Coast Guard helicopter.

But many a windjammer, like the *Flying Dutchman*, plies the trade routes of yesteryear, sailing forever between ports they will never reach. Those are the ships whose unfinished voyages continue beneath the waves, sent to the undersea world by storms, collisions and rocks and reefs lying in wait just beneath the surface.

Those who dive on these wooden wrecks are usually disappointed by the ragged remains that only vaguely resemble the stately ships they once were. A brig on the beach is quickly wave-battered into kindling. A clipper sunk farther offshore yields to the attacks of teredos and microbial action, and is soon reduced to a few worm-eaten ribs protruding from the sand. A barkentine down in deep water, although somewhat protected from the elements and the corrosive action of the sea, is beyond reach.

But the bottom of Lake Huron—where the water is fresh, clear, and cold—is safe harbor for a flotilla of merchantmen that never reached their appointed ports of call. It is here that ships like the *Dunderberg* came to rest.

I did not know what to expect that sunny August morning as I loaded my gear on the deck of the *Obsession*. As Dave Trotter calmly prepared his boat for departure, not a breath of wind stirred the air, not a ripple marred the lake's reflective surface, and, as I discovered when I rolled over the gunwale an hour later, not a hint of current stirred the tepid water. The anchor line went straight to the bottom as taut as a fire pole.



The alligator figurehead of the *Dunderberg* is in remarkable condition. The detail shows leaves and grapes on the figurehead.

The *Dunderberg* lies within the Thumb Area Preserve. Her deck is at 125 to 130 feet. Although Dave Trotter is not a commercial operation, the wreck is a popular site with area dive clubs.

I was thankful for my dry suit as I passed through the sharp thermocline. Seventy-degree water dropped 30 degrees during the intake of a single breath; from there to the bottom the water was a bitter 41 degrees.

Visibility dropped as well, decreasing from a comfortable 30 to 40 feet to about 20. Some slight sediment floated above the wreck, but enough natural light filtered through the 150-foot water column to permit exploration without using a light.

The *Dunderberg* rests on an even keel, more like a ship in drydock than a wreck at the bottom of a lake. The planing was unbroken, and the thick railing was crowded with deadeyes and belaying pins. I quickly glanced about to be certain no ghostly sailor was tightening the shrouds. Farther inboard, I noticed the main mast. It still stood straight and tall, but the top had snapped off and the sails were missing. Otherwise, the ship looked as though it could continue its journey, if only it could escape its watery prison.

The deck appeared to have been swept clean the day before, as only a thin layer of silt covered the wood. A swipe of my hand brushed it off to reveal the coarse-grained planks. When I exchanged astonished looks with my dive buddy, Joyce Hayward, her expression mirrored my own. Obviously, Dave was playing a cruel joke on us, or had





*Never
before in two
decades of
diving have
I been so
awed by a
shipwreck.*



accidentally put us on the wrong wreck. This ship could not have been down more than a few months—a year at most.

But it was the *Dunderberg* and her hull had slid down the ways two years after the end of the Civil War. Construction was completed that spring by master ship builder J.M. Jones in Detroit, Michigan. The dimensions listed on her certificate of enrollment were 186 feet in length, 33 feet in breadth, and 18 feet in depth (draft). She was 596 tons burthen. Her three masts were schooner rigged and she had a single deck and a square stern. All in all, she was not too different from hundreds of other vessels of her time.

The *Dunderberg* entered the grain trade under the ownership of Trowbridge, Wilcox & Co. (Trowbridge

owned two thirds of the ship, Wilcox one third.) For more than a year she worked the routes between Chicago and Buffalo. In those pre-canal days, the Great Lakes were landlocked.

August 13, 1868, found the *Dunderberg* downbound—from a higher elevation to a lower one—loaded with 40,000 bushels of corn. On board for a pleasant summer's outing were five passengers: Mr. Wilcox's wife, Mr. and Mrs. George Fairbrother, Mrs. E. Goddard, and Mrs. Harriet Larzellier. Upbound from the St. Clair River the *Dunderberg* encountered the propeller driven *Empire State*.

Capt. Charles W. Green, master of the *Dunderberg*, saw the approaching steamer when it was still "some 10 miles ahead about a point and half over our starboard bow." (As transcribed.) The ships were converging off the southern

entrance to Saginaw Bay, Michigan, an area at the time called Point aux Barques, but better known today as the Thumb. Visibility was excellent under a starlit sky, and several other vessels were observed in the distance. When it became apparent that the *Empire State* would pass uncomfortably close, Captain Green signaled furiously for the steamer to yield way.

Sensing the inevitable, Captain Green ordered the passengers to assemble on deck. He later testified, "A fearful crash followed. The propeller struck the schooner between the main and the mizzen masts, on the port side, crushing in her planks and timbers, and making a hole several feet in depth, and cutting her down below the water's edge."

The shock of the collision snuffed out

the *Dunderberg's* kerosene lanterns, plunging the ship into darkness. Water poured into the hull at a frightful rate. With the ship settling quickly, the captain and crew launched the lifeboat and ushered everyone aboard. When a count was taken on the frail craft, Mrs. Wilcox was nowhere to be seen. She was the only casualty.

The *Empire State* hove to. Her forward planks were smashed, and she was taking water in the bow compartment. A steam pump stemmed the flood so that she was not in immediate danger of sinking. The steamer picked up the *Dunderberg's* survivors and continued on her voyage to Chicago.

Now I saw the breach in the wreck's hull. The decking was also torn up, and the wood splintered. The schooner rested on a hard clay bottom. Several inches of lake sediment was not enough to cover the running rigging that had toppled overboard, and now lay on the lake bottom.

Such a collision could not go unnoticed, or uninvestigated. The Local Inspectors of Steamboats held an inquiry in Detroit on September 3, 1868. Joseph Cook and P.E. Saunders took testimony from Captain Green and from four officers and two crew men from the *Empire State*. The events of that fateful night unfolded.

Captain Harvey D. Phealt having retired to his room, command of the *Empire State* was given to Second Mate John Longley. The wheelsman was William Fahl, the lookout Bernard Decker. Longley was standing right behind the lookout on the promenade deck when they both spotted the lights of the *Dunderberg*. Unfortunately, Longley misinterpreted the schooner's starboard light (green) as the Port aux Barques light, and her port light (red) as a tug boat. When he ported his helm to go between the two, he unwittingly veered directly into the path of the *Dunderberg*.

Captain Phealt "was awakened by hearing the Second Mate say port, at the same time the wheel chains made considerable noise which helped to waken me. I immediately left my room and went to the top of the pilot house rang to stop and back the engine. The engineer shut off the steam but before he had time to reverse the engine the collision took place."

Chief Engineer James M. Graham verified the time elements in the engine room. Both Captain Phealt and First Mate William A. Smith came to Longley's aid by stating that the night was somewhat cloudy, although there was no fog or haze on the water. If Supervising Inspector Guthrie took this latter information into account when he made his report to Secretary of the

Treasure Hugh McCulloch, it did not show in his recommendation.

On October 1, Guthrie wrote that "a full and careful inquiry was made which resulted in the acquittal of all those on board the schooner from blame and fixing the entire fault upon John Longley the Second Mate of the *Empire State*. . . The testimony in this case was so conclusive as to leave no room to doubt that it was the mismanagement of the pilot Longley" that caused the collision. His license as a pilot was at once revoked being all the punishment the Inspectors could inflict.

Furthermore, "Mr. Longley had been arrested and imprisoned under the charge of manslaughter in causing the collision whereby one of the passengers (Mrs. Wilcox) on the *Dunderberg* lost her life. But the courts at Detroit ruled that there was no law holding him amenable as the life was not lost on the vessel of which he was in charge. He was therefore liberated."

John Longley's poor judgment produced the most alluring shipwreck this author has ever dived.

Joyce and I swam back across the deck, over an open hatch, then forward along the gunwale past the fallen crossrees. We found the woodstock anchors lashed to the rail next to the cathead. Then we followed the jibboom to its point—nearly 60 feet away—turned around, and dropped under the bowsprit. The stabilizing chain looped down toward a ring bolt on the cutwater.

But the most amazing sight was the stylized alligator figurehead. With mouth agape and tongue protruding, its back and the top of its head were firmly attached to the underside of the

bowsprit. A fine frill of algae gave the figure a soft-focused appearance, like a five o'clock shadow. A bright dot of red paint glinted from the eyeball.

The ridged tail extended six feet aft, blending with intricately carved designs of foliage, leaves, and curled branches. A bird, perched on a stout limb, stabbed with its beak at a bunch of grapes. The craftsmanship was superb.

Never before in a career of diving that spans two decades, have I been so awed by a shipwreck, or have I felt such a thrill underwater. That a grand representation of nineteenth century shipbuilding should exist in a state of perfect preservation in the cold, fresh water of a lake was literally beyond belief.

For more than 120 years the *Dunderberg* lay quiescent on the bottom of Lake Huron, waiting patiently like a concealed museum, or an unopened Egyptian tomb, to present its sculpted form to a generation of people who looked upon ships not as beasts of burden, but as works of art. The splendid age of sail has not died, it has simply changed venue.

Like the *Flying Dutchman* that continues to sail the ocean blue, the *Dunderberg* will cruise forever along the bottom of Lake Huron. But whereas the *Flying Dutchman* is an omen to beware, the *Dunderberg* is the harbinger of an experience to behold. It is only one of many surprises awaiting the inland diver. Not only Lake Huron, but indeed all the Great Lakes, contain a gallery of ships unsurpassed in the world of wreck diving.

Paraphrasing the words of geneticist J.B.S. Haldane, "Not only is the diving better than we imagine, it is better than we can imagine."

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SCUBAPRO

Trivia Quiz

BY E.R. CROSS

Diving is the art of going underwater and remaining for a considerable time. Depths reached by divers, times of remaining submerged, and the reasons for being under water in the first place are as diverse as the fascinating environment we invade. Probably the first diving was done to gather marine resources for food; then for military purposes. Soon commercial divers were hired to salvage things from under the sea and to build marine structures. In comparatively recent years "sport diving" evolved; at first a high-risk, masculine undertaking. Finally, we entered today's era of "recreational diving;" a non-gender, safe, fun way to spend days filled with adventure. As you prepare for this season of recreational diving, try this Trivia Quiz which is designed to help you realize and understand the impact that all diving may have on the fragile bit of earth's water we enter.

Learn to be gentle with our stressed underwater environment and give yourself five points for each correct answer.

1. The environment is the sum total of all surrounding or associated matters which may influence organisms living in the ambient substance of the area.

True _____ False _____

2. The total physical environmental conditions natural to kinds of organisms occupying a specific place is called a

3. The smallest region of uniform environmental conditions and its population of animal and plant life is called the (select one):

- a. Hadal zone
- b. Biotope
- c. Key area.

4. When a diver enters the water there is, by the very nature of the act, a forcible and/or enforced contact between the diver, the environment and the biota. The impact of this contact is never beneficial to the environment.

True _____ False _____

5. When making a shore dive there are several kinds of wet to watery environments which a diver impacts. All of them harbor differing life forms. For five living points match the kinds of environmental zones with the brief descriptions.



Dimitri Rebikoff, an early diver, always respected the marine environment.

- 1. Supralittoral
- 2. Tidal
- 3. Benthic
- 4. Littoral
- 5. Eulittoral

- a. Depth to which light penetrates.
- b. Landward part of the littoral zone.
- c. Zone between high and low tides.
- d. Zone above the upper limits of waves and tides.
- e. The bottom of any body of water.

6. The action of winds, waves, tides, currents and adjacent shore conditions can affect environmental conditions in any or all of the environmental zones.

True _____ False _____

7. For five creepy/crawly points select the 4 (out of many) kinds of marine life that are usually found in the environmental zones described in question 5.

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- Ammonoids
- Crustaceans
- Monoplacophores
- Algae
- Echinoderms
- Corals

8. Of these kinds of marine life which one is the most sensitive to damage by the actions of divers? _____

9. Divers entering open ocean waters are usually impacting the _____ zone.

10. Only a few kinds of marine life inhabit the surface of open ocean waters. For five stinging points, which of those animals is most likely to be hazardous to divers? _____

11. A large percentage of recreational divers are what the industry now calls "destination divers." They travel to usually warm, clear, bountiful waters. For five points number the following U.S. continental destinations in their order of current popularity.

- ☐ Florida ☐ Gulf States ☐ California
☐ New England ☐ Great Lakes ☐ Mid-Atlantic States

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15. When collecting marine life such as clams and fish for food, shells or other animals for study, it is best to leave the smallest and largest to propagate the species.

True _____ False _____

16. Many forms of marine life are found under rocks, dead coral chunks, in seaweed, etc. When examining specimens from such sites, always _____ the objects as near the original position and condition as possible.

17. With some exceptions, very little marine life of interest to a diver will be found in close proximity to a fragile coral reef.

True _____ False _____

18. Several kinds of plastics end up in the oceans and kill marine life.

True _____ False _____

19. Polluted water will _____ or will not _____ purify itself in 20 years.

20. This is a freebie. With the right combination of good equipment, knowledge, experience, instinct and good watermanship, you can learn the secrets of your favorite dive site and how to enjoy a compatible life with that site.

In the meantime, dive gently into the beautiful but stressed waters of our planet.

Compare these thoughts with what you see as you enjoy diving. You are probably a caring diver and will answer all of the questions with ease. Remember SCUBAPRO reserves the right to be wrong; at least until someone corrects us. Which they do occasionally. A reader called to tell us that the absolute pressure at a depth of 35,840 feet (the deepest spot in the oceans), is 1086 atmospheres (plus 1 = 1087 atmospheres absolute) not 2,439 as published. Another reader wrote asking whether waiting 12 hours before flying after diving should be 24 hours. NAUI and NOAA Manuals say 24. Most other manuals and the Navy Diving Manual states 12 hours following a decompression dive. Commercial divers must wait 36 hours following a saturation dive. Your comments are greatly appreciated. Many thanks. A "TRIVIA" submitted by Nick Buda will be used in the next issue of SCUBAPRO Diving and Snorkeling.

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Six to 10—Much better but you still need a closer relationship with your dive sites.

Eleven to 15—Your diving environment will now start revealing the secrets of an enjoyable and understanding dive.

Sixteen to 10—Fantastic understanding of the underwater world.

Lead on, many will follow.

The answers are on page 59.

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Dimitri Rebik

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- () Florida () Gulf States () California
() New England () Great Lakes () Mid-Atlantic States

12. Recreational divers, particularly scuba divers, should be aware of the impact their presence may have on the environment they are visiting. For five fragile points match the most accurate description of the potential environmental damage that may be caused by the careless use of the listed equipment

- | | |
|--|---|
| 1. Scuba tanks | a. Striking marine growth or dislodging marine life from bottom sand or sediment. |
| 2. Octopus rigs, consoles, and cameras | b. Scraping against and dislodging marine life. |
| 3. B.C. units | c. Equipment dragging across coral damaging polyps and the living coral. |
| 4. Swim fins | d. Shattering marine growth and the substrate to which attached. |
| 5. Dive boat anchors and chains | e. Banging against corals and marine growth on rocks and other substrate. |

13. With the use of modern recreational diving equipment it is possible to maintain neutral buoyancy during all phases of a dive.

True _____ False _____

14. Maintaining a dive above the bottom and clear of marine life not only reduces environmental stress but also helps maintain good _____ by not stirring up sediment.

15. When collecting marine life such as clams and fish for food, shells or other animals for study, it is best to leave the smallest and largest to propagate the species.

True _____ False _____

16. Many forms of marine life are found under rocks, dead coral chunks, in seaweed, etc. When examining specimens from such sites, always _____ the objects as near the original position and condition as possible.

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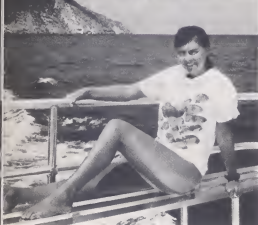
Lead on, many will follow.

The answers are on page 59.

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BY D. HOLDEN BAILEY

Desert Retreat



Diver, opposite, encounters a school of king angelfish. Guests, above, receive scuba instruction free at Sonora Bay. A diver relaxes after a trip to Seal Island which can be seen in the background.

Although late in the afternoon, it was still stiflingly hot as we zigzagged across the desert sand working our way around the cactus and scrub brush. Our destination, a rocky, cactus-crowned hill, was still about a half-mile away as the bird flies, but our circuitous route was much longer. The hill seemed a perfect vantage point to photograph the Sonora Bay Club Med as the sun sank into Mexico's Sea of Cortez. My companion, Mia, had come along to do some bird watching.

My shirt had become completely saturated within minutes of the start of our hike, and I had to wipe the sweat off my brow every couple of minutes. The large bottle of water we carried was emptying at an alarming rate, yet I was thankful it was becoming lighter.

In spite of the sweltering heat, Mia was delighted at seeing hummingbirds,

partridge, and other birds, the tiny lizards whose curled tails made them resemble scorpions at first glance, and by the desert's colorful flowers. I was fascinated by the enormous cactus, the floppy-eared jackrabbits, and by the pastel hues the waning sun's rays were casting on the distant mountain range.

Finally, after reaching the hill and climbing a very steep, rocky slope, we stood on the summit and looked back toward the resort. The view from our vantage point was well worth the effort expended getting there. The adobe, pueblo-style buildings of the Club Med were strung out along a sandy beach which seemed to glow in the light of the setting sun. The lagoon behind the club looked like a huge mirror. Off to the left, the nearby village of San Carlos could be seen.

The desert was a lush green due to the higher than normal amount of rainfall this year. Individual cacti were beautifully lit by the late sun. Seal Island (Isla San Pedro), lying 14 miles offshore, acquired a subdued pinkish tint. It was glorious while it lasted, but, as always, the sun seemed to pick up speed as it neared the horizon, quickly slipping out of sight. A lingering red sky illuminated our way back across the desert.

Early the next morning I carried my cameras down the sidewalk between the lagoon and the beach to the scuba shack. The long walk made me thankful my diving gear was stored here in the locker room. Susie, my diving buddy, was already there waiting. When everyone had collected their gear and loaded it aboard a small boat, we made our way out to the *Nomad*, which was anchored about 100 yards offshore. Tanks and weight belts were already on board.

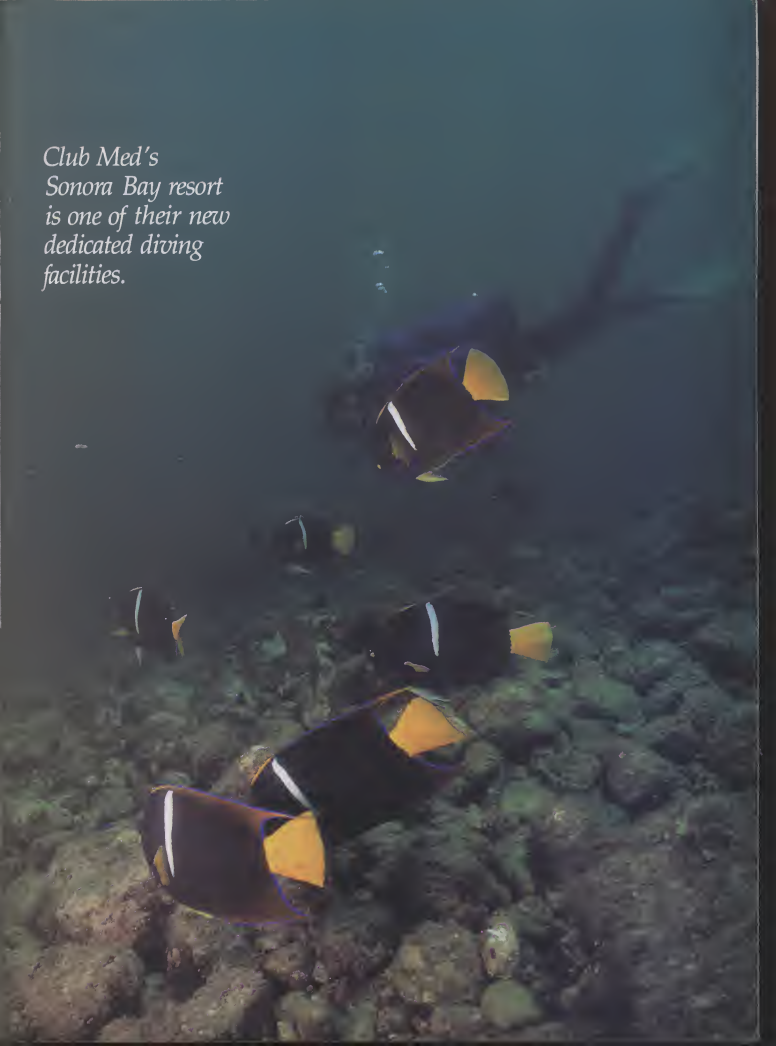
The sun was well above the mountains as the *Nomad* got underway for the 1½-hour ride out to Seal Island. The day looked to be perfect for diving. The swells were no more than knee-high, making for a smooth ride. White, fluffy clouds drifted leisurely across a deep-blue sky, only occasionally blocking out the sun. The white spray coming from the bow of the *Nomad* sparkled in the sunlight, contrasting vividly with the steel-blue of the water.

Although locals call it Seal Island, the mammals we hoped to dive with were actually sea lions, which lived there. These acrobatic creatures can be great fun to dive with, especially the first time.

As the boat drew close to the three-mile-long rock island, several sea lions could be seen sunning at the water's edge. The animals weren't uniform in color, but were shades of gray, red,

D. Holden Bailey is a free-lance writer and photographer from Ohio. He is a frequent contributor to SCUBAPRO Diving & Snorkeling.

*Club Med's
Sonora Bay resort
is one of their new
dedicated diving
facilities.*





brown, and black. There were several young among them.

Bill, the boat's pilot, eased the *Nomad* up fairly close to shore and signaled for the anchor to be dropped. By then, most of our group of about 20, with a wide range of experience, were suited up and ready to enter the water.

Once in the very warm water (87 degrees), Susie and I immediately swam toward the shoreline, hoping to encounter swimming sea lions. None were around so we explored along the rocky bottom. Close to shore the colorful rocks and pebbles were worn round and scoured free of algae by the wave action. The waves breaking on the rocky shore filled the water with millions of tiny air bubbles. If we entered this turbulent area, it was like swimming in a washing machine full of Alka-Seltzer. Visibility was only about 10 bubbles.

We swam a few feet away from shore to avoid the waves and to photograph the numerous starfish we found. Huge black sea urchins were wedged into spaces between the rocks with their long spines doing an excellent job of protecting them from whatever it is they fear. Small schools of blue-and-yellow king angels decorated the water column. Cortez angels, Cortez grunts, and bumphead wrasse busily pecked away at the rocks. We found a couple of shy moray eels peeking out of their daytime lairs, their fierce countenance belying their actual timidity. I enjoyed all this, but I kept looking around hoping to see a sea lion.

We heard barks before we actually saw them, but couldn't determine the source of the sounds. We spun slowly around, our eyes straining to see farther than the 30-foot visibility allowed.

As if by magic, the sea lions materialized, first one, then several more. A few zoomed over and circled before going on by. One of the cows hovered motionless in a head-down position, and watched us until we approached too close for her comfort. She would then disappear in an incredible burst of speed. These creatures are among the best swimmers in the sea. Sea lions are very fast, but they can also turn or stop on a dime, using their large front flippers like wings for maneuvering. They appear to perform acrobatics purely for the joy of it.

At one point we encountered a large bull which swam back and forth in front of what he apparently considered his territory. I assumed the path he was swimming was sort of his "line in the sand," and I didn't attempt to cross it, since he outweighed me by a considerable amount. I edged to within a few feet of his line to take some photos and knelt on the bottom shooting away. The bull would swim a few laps back and

forth, then dart toward me, stopping about two feet away, and bark, emitting a stream of bubbles. He would then go back to his border patrolling. Behind him, several cows and calves peered curiously at us, like children trying to see who's at the door.

After the dive, everyone enjoyed the snack of fresh fruit and rolls which was always served between dives. Only one dive was scheduled on the island because of the long boat ride, so we headed back to the mainland.

On the way back to the club, the weather continued to be perfect. This hadn't been the case on a previous dive a couple of days earlier.

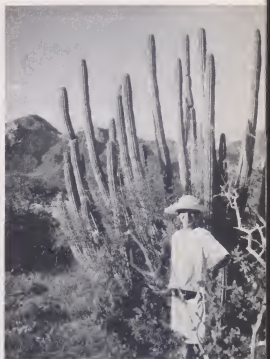
On that day, after another excellent dive with the sea lions, dark clouds began to roll swiftly across the sky on our way back. The storm moved along the coast, enveloping the resort area in a dark rain cloud as it passed. Behind us, Seal Island, still in the sunshine, was an island of light, the sun's rays bestowing an unearthly glow to it.

Bill was more worried about another, more ominous-looking storm still out at sea, but moving on a course which could intersect ours before we made it in. He gave the crew orders to make sure everything was properly secured. For close to an hour the *Nomad* raced the storm toward shore, and for awhile it looked like we'd beat it. But with only a couple of miles to go, we lost the race.

When the storm hit, everything changed at once. The temperature dropped at least 20 degrees and it was suddenly almost as dark as night. The small swells became large, white-capped waves. The canvas top whipped and cracked as the wind tried to rip it away. Rain blew across the deck in sheets. Bill ordered everyone below into the enclosed cabin, and remained alone on deck to steer the boat into the wind. No one was talking, as they could not have been heard above the noise of the storm anyway.

The 65-foot *Nomad* rode out the squall admirably well. After about 15 minutes it passed, leaving a much-relieved group of divers in its wake. The double rainbows which appeared made everyone completely forget the tempest.

Club Med also runs a two-tank trip daily and one night dive per week to closer sites along the shores of the mainland, usually using the *Sabrina Gale*, their 42-foot dive boat. These sites are much like the ones around Seal Island, but lack the sea lions. The bottoms are rocky for the most part, with some sand areas. The most colorful things we encountered in these areas were the brilliantly colored starfish and the king angelfish. There were a few small red sea fans, but not much else in the way of corals.



Sea lions entertain divers at Seal Island, opposite. Mia looks for birds in the desert at Sonora Bay.

Scorpionfish were numerous and we had to always be aware of where we touched the bottom. The only real danger from these nonaggressive fish is accidental stings from their poisonous dorsal spines, which can be quite painful. The fish lie motionless, their drab colors making them blend in so well with the bottom that they are virtually invisible. When disturbed, they spread their pectoral fins, revealing a rainbow of colors which starkly contrast with the rest of their bodies, and swim a few feet before settling back on the bottom, secure in their protective armament.

Stinging hydroids were even more common, although their mild sting is more of an annoyance than a real problem. Lycra wet suits offer ample protection from these small, feather-like creatures.

Sonora Bay is a dedicated dive resort, which means the diving program here has more to offer than that provided at non-dedicated Club Meds. Resort courses are offered at no extra charge and consist of four pool lessons followed by ocean diving with an instructor. PADI and NAUI Open Water Certification courses are also available for \$150. PADI Advanced Open Water and NAUI Open Water II classes are offered for \$100. Pairs of certified divers can choose between diving on their own or with the instructors, but are limited to three dives per day. The sites we dived were in the 20- to 60-foot range.

When planning the trip, I wasn't sure

Travel Tips

Getting There

Sonora Bay Club Med is located about halfway down the eastern shore of the Sea of Cortez, 17 miles from the airport in Guaymas, Mexico. Several airlines serve Guaymas, but most guests take advantage of Club Med's one hour charter flight from Phoenix aboard America West Airlines. By land, it is 260 miles due south from the U.S. border at Nogales, Arizona.

Rates

Adult rates per person are \$100 per day or \$630 per week. Rates for children 6 to 11 years old (six is the minimum age accepted here) are \$75 per day or \$470 per week. This includes all meals and diving. Scuba equipment, featuring SCUBAPRO regulators and BCs, is also included, although you may bring your own if you wish. Packages with airfare are also offered. From Chicago, for instance, the rate for an adult is \$999 per week.

Seasons

Sonora Bay is open March 3 to December 2. The water temperature during the winter months drops into the mid-fifties but reaches the mid-eighties in summer. Air temperatures in summer are often over 100 degrees. Water visibility in the summer is usually in the 60 to 80 foot range, with June to October usually being the best months for good visibility. Algae blooms in late spring can reduce visibility to 20 to 40 feet. Visibility at Seal Island is usually better than that along the mainland.

Documents

Proof of citizenship, such as a passport or birth certificate, is required.

Language & Currency

Spanish is the language of Mexico, but all of the G.O.s speak English. Most are multilingual as they represent 17 countries. The local currency is the peso, but cash is not accepted at the resort's bars and boutique. Guests purchase "bar beads" of various colors and denominations, which are used as money at the club. Tipping the G.O.s is not expected, nor are they permitted to accept them.

how I'd like the Club Med type of vacation. From what I'd heard about them, it was just party, party, party, from arrival to departure. If this is what you want, it's readily available, as many guests demonstrated. The G.O.s (staff) have something going on all day long from tequila drinking contests to volleyball to competitive swimming. On the other hand, if you want to just sit on the beach with a good Hillerman mystery (very appropriate for the Sonoran Desert), sipping a cold drink while you work on your tan, you can do so, secure in the knowledge that no one's going to drag you back to the bar or pool against your wishes.

In addition to the diving and snorkeling, Sonora Bay offers tennis (29 courts), waterskiing, sailing, windsurfing, a fitness center, aerobics, volleyball, basketball, and ping pong, all at no extra charge. Horseback riding, deep-sea fishing, and excursions to nearby villages are available, but are not gratis.

In the evenings, the beach restaurant serves double duty as a lively disco for those who have surplus energy left after the day's sporting activities. Often hilarious and always entertaining shows are performed nightly on stage in the club's auditorium by G.O.s, often accompanied by a few G.M.s (guests). These can be anything from musical productions to gong shows, with a surprising amount of talent evident both in arrangements and performances.

The main restaurant serves three

meals a day, buffet style. The first time I tried it, I wandered in awe around the many displays of food laid out among floral decorations. The food didn't really need any additional enhancement. It was so hard to resist the large variety of delicious offerings that most of the guests, myself included, didn't even try.

Diners are seated by a hostess as they arrive. Singles and small groups are placed at tables of about eight people, but larger groups could share a table if they wanted to. G.O.s and G.M.s dined together, making it a great place to meet new people and make new friends.

For a change of pace, the beach restaurant, a more traditional, sit-down-and-order type of restaurant, is available, but reservations are required. A snack bar is located near the tennis courts and horse ranch. Trays of fruit and other snacks are served in the pool area all day long.

The brown, pueblo-style buildings of the resort were designed to fit into the desert landscape, and they do this very well. The tile-floored rooms are air-conditioned and come with bathroom and shower. Some face the ocean, while the rest are garden-front. There are locks on the doors (not all Club Meds have locks), and safes for storing valuables are in each room. Both single- and double-occupancy rooms are available. The electricity is the same as in the U.S., 110 volt, so battery chargers, electric shavers, and hair dryers do not require adapters.

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Diver scatters a school of Cortez grunts.



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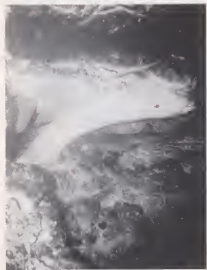
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Hurrah



A California moray strikes the classic pose that has made these eels so frightful to the uninformed. The moray, above, ventures from its hiding place in the rock.

To experienced divers,
moray eels are old
friends, but to the
uninformed, they can
be frightening.

for Morays

BY JONI DAHLSTROM

Photos by Adam Zetter

The moray eel has quite a reputation. Its gaping jaws and razor-sharp teeth strike fear into the hearts of otherwise sensible people. It may be largely a result of mankind's almost universal dislike of snakes or anything that resembles a snake, but it is certain that eels are frightening to just about everybody, with the exception of scuba divers. Even in ancient Rome the moray was considered a dangerous man-eating fish, and the fact that the Romans fed slaves to captive moray eels did nothing to enhance the fish's reputation.

The primary reason moray eels look so vicious is that they wash water over their gills by opening and closing their mouths, a movement that makes the eel appear threatening and its teeth most formidable. But in spite of their frightening appearance, moray eels are shy, retiring creatures that prefer to hide in holes throughout the day and do their hunting under the cover of darkness.

At least 80 species of moray eels comprise the family *Muraenidae*. They are very successful, from an evolutionary standpoint at least, as moray eels are found in shallow waters of all the warm and tropical seas of the world. Morays usually grow to about five feet in length,

but one Pacific variety, *Thyrsoidea macrura*, reaches lengths of greater than 10 feet.

Often divers will explore an area during the day without finding even a trace of a moray eel. The eels can hide so effectively that divers may not realize they are swimming over a reef with hundreds of large moray eels hidden from sight. A night dive in the same area might present an entirely dif-

ferent picture, with moray eels hunting in plain sight all over the reef.

Moray eels do not migrate, though for many years researchers thought that they must because baby morays were never found and the juvenile life of the moray was a total mystery. At last it was discovered that morays go through a larval stage and that the young are a different shape from the adults. When the eels are very young they look like a thin translucent ribbon, and only later do they change into the shape and color that most people recognize as an eel.

Morays are efficient predators, eating fish, octopus and squid. The moray's body is thick without scales or pectoral fins, and has a snake-like form that is perfect for a life spent in rocky crevices; the long, sinuous shape allows morays to hide and hunt in narrow cracks and the smooth body enables the eel to back into a hole without getting fins or scales caught on the rocks. California morays are known to visit cleaner shrimp holes regularly, where the shrimp crawl in and out of the eel's mouth in complete safety.

At one time it was thought that morays had poison venom. Recent research shows this theory is unlikely as there is no evidence of poison sacks on a moray like those found in venomous snakes. But, a bite from a moray is likely to develop a bad infection because morays have toxic bacteria living in their mouths. This poison bacteria works like a venom. When an eel bites, the poison bacteria enters the wound by means of the eel's teeth.

However, on the whole eels present little for divers to fear. The greatest danger is for divers who hunt lobster or shellfish. They could easily stick their hand into an eel's hole and provoke an attack. But almost any animal will bite under similar circumstances. Moray eels are fascinating creatures. Shy and untamed, they are a beautiful part of the ocean world.

The writing/photography team of Joni Dahlstrom and Adam Zetter is based in Santa Barbara, California. They are frequent contributors to SCUBAPRO Diving & Snorkeling magazine.

SHOPPERS' CORNER



QUICK CLIP SNORKEL RETAINER

Removing a snorkel from a mask strap can now be done with just the press of a finger. The SCUBAPRO Quick Clip Snorkel Retainer allows you to quickly detach the snorkel so your mask can be stored safely in its protective case to keep the lens scratch-free.

One part of the Quick Clip connects to any snorkel with a retainer, like the SCUBAPRO Clipper Shotgun Snorkels. The other Quick Clip part connects to the mask strap. Then for a fast, secure attachment of the snorkel and mask, just snap the two parts together. To detach them simply press the detent button.

The Quick Clip is made of strong, non-corrosive material. It is black and coordinates with any color mask and snorkel. See your SCUBAPRO Dealer about this ingenious device to make your diving easier.

COMPACT TRI-VENT MASK

The new SCUBAPRO Compact Tri-Vent Mask has been introduced, because of the large percentage of divers who have smaller faces or like a closer fit.

The frame and lens of the Compact Tri-Vent is the same as the very successful full-size Tri-Vent Mask. However, the Compact Tri-Vent has an overall reduction of 10 percent around the face contact area.

The stylish color combinations have been carried through the Compact Tri-Vent Mask, which is available in Blue, Red, Clear and Teal. Try one on at your local, authorized SCUBAPRO dealer.



SHOTGUN 2

SCUBAPRO has just announced the availability of the newest member of their snorkel family, the Shotgun 2. This latest advancement on snorkel technology builds on some of the great design innovations of the very successful SCUBAPRO Shotgun Snorkel. The new Shotgun 2 is a quantum leap beyond what was already the best snorkel design on the market.

It is the closest approach ever to an automatic snorkel.

The dynamic features of the Shotgun 2 include a smooth, clean design with accent lines molded into the purge valve, upper chamber and snorkel top.

For better positioning, the mouthpiece can be adjusted. The mouthpiece is made of medical grade, soft, clear silicone, and is odorless, tasteless and very comfortable.

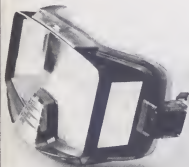
The smooth flowing lines of the purge chamber provide almost effortless purging. This unique feature dramatically reduces the water blowing distance by providing outlets at the top tube opening and down through the bottom purge valve. The result is much less effort is needed to clear the Shotgun 2 of water.

Reduced swimming water resistance is achieved with the elliptical shape of the upper barrel, producing an improved hydrodynamic profile. The Shotgun 2 curves around the wearer's head, making it less susceptible to getting hung up on objects or marine plants.

The new SCUBAPRO Quick Clip Snorkel Retainer comes on every Shotgun 2 for fast attachment and detachment from your mask. The patented Shotgun 2 is available in four colors: blue, red, teal and clear tube with black purge chamber. Check out the Shotgun 2 at your SCUBAPRO Dealer.

ALL RUBBER SEA WING

The All Rubber Sea Wing is a unique compromise between the pure power of a stiffer bladed fin and the total comfort of a flexible fin. The natural "snap back" of rubber provides excellent swimming efficiency, even at the lightest kick, and still has enough blade resistance to supply power when it's needed. If you're looking for a better Jet Fin, and you like basic black, the All Rubber Sea Wing is for you. Available at your authorized SCUBAPRO dealer, the All Rubber Sea Wing is produced in three sizes: medium, large, and extra large.

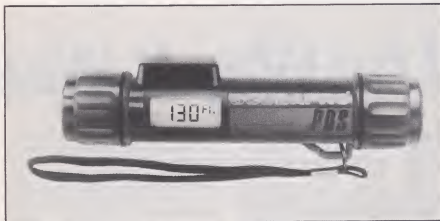


NEW D350 REGULATOR

SCUBAPRO has just released their latest high tech Second Stage Regulator, the D350. It is a further design and performance enhancement of the very successful D300 Regulator, considered by many seasoned divers to be the ultimate second stage regulator.

The advanced D350 has a new high cam demand valve lever, which improves flow rates at depth. Valve seat wear has been reduced even further through the use of new low compression silicon seat materials and a redesigned orifice angle. The cap has been redesigned with a stronger thread configuration.

The switch has been changed so the customer can choose from three different colored accent decals (blue, red and teal). The D350 follows the SCUBAPRO philosophy of over 25 years of continuing improvements of our quality products. See the D350 at your local Authorized SCUBAPRO Dealer.



SONAR VISION

SCUBAPRO's hand held Personal Dive Sonar allows you to determine with ease the distance to the bottom, shipwrecks, reefs, other divers, schools of fish, and many other objects. A sonar beam angle of only 24 degrees allows you to easily pinpoint boats on the surface, anchor lines, and kelp. The PDS becomes a must during night dives or in dirty water. The PDS can see objects up to 260 feet away and operates down to 300 feet. With only one switch to operate, the lighted display immediately tells you the distance to objects. Available at all authorized SCUBAPRO Dealers.

SCUBAPRO TANKS

SCUBAPRO Chromemoly Tanks are available in five configurations and four sizes; 60.6, 71.4, 75.8, and 95.1 cubic feet. These tanks can be purchased with or without valves.

All SCUBAPRO Chromemoly Tanks are externally double coated with zinc for corrosion resistance and have an outer, white epoxy, polyurethane paint for a very durable and attractive appearance.

SCUBAPRO engineers highly recommend the installation of a tank boot on all SCUBAPRO tanks for stability as well as tank bottom protection.

SCUBAPRO offers you the opportunity to match the type of diving you do to your tank size. Visit your local SCUBAPRO dealer and select the tank that is "just right" for you.





Photos courtesy of American Divers, Honolulu



The Way It Was

BY E.R. CROSS

Illustration by Nick Fain

The Hawaiian island of Oahu now has a second major harbor in addition to the one at Honolulu. It is located on the Waianai (western or leeward) side of the island in the Campbell Industrial Park, near Barbers Point. The work of a team of commercial divers helped make it happen—on time and within budget.

The construction of Oahu's second deep draft harbor in the spring of 1983 was a tightly bid, \$49 million job awarded to Peter Kiewit Sons Company (PK), a marine construction company based in Vancouver, Washington. The successful completion of this job depended on almost continuous operation of a giant backhoe-type machine called a DEMAG H-241.

At a cost of nearly \$3 million, PK purchased and brought the system to Oahu specifically to excavate the new Oahu

harbor. This German-built machine is big. Rigged to dig to a depth of 40 feet, it weighs 350 tons (700,000 pounds), making it one of the world's largest excavating machines. The backhoe-type bucket can excavate 13.5 yards per shovelful. The machine is hydraulically powered throughout: the tracks on which it moves, the boom, the stick, the bucket. Hydraulic power is generated by a 1,300 horsepower engine which drives a 4,000 psi hydraulic pump. Electronic components provide easy control of the huge machine.

The site chosen for Oahu's second deep draft harbor was a low, flat area composed mostly of hard, dead coral and coral-shell conglomerate. The surface of the material to be excavated stood about three feet above sea level, and the operator of the DEMAG had been working for days, digging designated sections of the new harbor to a depth of 40 feet.

On Thursday, March 24, the DEMAG was moved to a new excavation site, a nearly perpendicular slope. Several digs were made to a depth of 30 feet, and the DEMAG was then brought close to the edge of the bank to bring the harbor to its final depth of 40 feet. Unknown to the operator, the bank contained

E.R. Cross is a pioneer in the field of diving. He has been associated with the sport for 55 years. Mr. Cross served as a U.S. Navy diver during World War II and the first two Bikini atomic bomb tests. He later operated the the first commercial diving school and worked for Chevron in Hawaii until retiring in 1985.

pockets and stratified layers of soft, sandy and clay-like material, possibly of volcanic origin. As the boom and bucket were swung, the DEMAG began to slowly sink into the newly dug harbor. The operator immediately forced the bucket down against the bank in an attempt to prevent the DEMAG from sinking. The bank caved in under the bucket, and the giant machine continued to the bottom. The operator and the oiler, both inside the enclosed, air conditioned cab, stayed with the rig.

Joe Hall, PK's on-shore superintendent, had just climbed down from the cab of the DEMAG and was walking toward his truck. He turned in time to see the \$3 million rig on which the job depended sink slowly into the harbor. The DEMAG came to rest submerged in just over 30 feet of water. Joe rushed back to the site of the sunken rig and helped rescue the two men who had escaped from the cab, wet and gasping but unhurt.

Back in his truck Joe reported the accident to the field office by radio. Dave Imper, PK's Project Manager, called a meeting of project engineers. An im-

held a conference to discuss the best way to effect salvage of the DEMAG. After hours of discussions, only two methods seemed viable. One was to rig heavy slings and bring in a U.S. Navy crane capable of lifting the 350-ton load. Rigging wire slings and chains heavy enough to make such a lift would very likely cause considerable damage to the rig. The only other method that seemed remotely viable was to rig hydraulic hoses from a topside power source to the DEMAG hydraulic system and have divers operate the controls of the DEMAG to "walk" it out of the lagoon under its own power. This method would cause little or no damage but, as a PK engineer remarked, "presented almost insuperable problems." After more discussions and with the assurance by divers Anderson and Murphy that the project was "a piece of cake" this was the chosen method of salvage.

For the next two weeks, diving crews and topside personnel were busy rigging wire slings to turn the DEMAG back on its tracks and to point it toward a ramp which was being excavated up the

side of the harbor. Larger wire rope slings were led from the DEMAG to shore to help pull the rig up, if it could not be walked to shore. Divers cleared loose rubble from around the rig so it could be moved or move under its own power.

A large, hydraulically powered loader was brought to the scene and rigged to act as the power source for the DEMAG hydraulic system. Hoses and fittings were assembled. Since communication with topside personnel was important, divers were outfitted with Kirby-Morgan superlight helmet outfits with Helle telephones for voice communication.

After a week of hard work attaching cables and digging away coral rubble, divers reported the DEMAG ready. From the factory in Germany it had been reported that the stable point of the machine was 48 degrees, only 4 degrees off from the position of the drowned DEMAG. On Friday, three large tractors were attached to the wires the divers had rigged. They began their pull slowly and the DEMAG began to move a few inches at a time. Then,

American ingenuity at its very best

mediate decision was made to call American Divers, a Honolulu-based company of highly qualified commercial divers. Within an hour, divers inspected the sunken rig and soon thereafter made a preliminary report to the contractor. The front end of the DEMAG was down at an approximate 11-degree angle in a pile of coral rubble. The machine also lay on its left side, tipped at an angle of about 52 degrees.

For the next two days, the diver worked underwater taking measurements, making sketches, and gathering data for PK's engineers. By Saturday evening, lead diver Andy Anderson and diver Murph Murphy knew almost as much about the DEMAG as the operators did. They were ready to salvage the giant rig they had already dubbed "the creature from the coral lagoon," or, when things were not going right, "the sea monster."

While the divers were busy underwater, PK's engineers were hustling people topside. PK specialists were flown in from Chicago, Vancouver and Omaha. The telephone lines hummed with conference calls to DEMAG engineers in Germany.

On Monday, March 28, PK management and American Divers personnel

The DEMAG, opposite and below, slowly makes its way back to the surface.





Safely ashore, work begins immediately to clean the DEMAG.

when the stable angle was passed, the giant machine simply tipped over onto its tracks and came to rest. It rested at an angle of only 26 degrees, well within stability limits.

It was now time for the divers to run the hydraulic hoses and connect them to proper fittings so the DEMAG's controls could be used. To make the final connections, diver Anderson had to open a hatch and squeeze into a small compartment. Inside this cramped space, its walls lined with hydraulic hoses and electric cables, he had to determine by touch alone which two connections would link topside power with the DEMAG's hydraulic system. Andy connected on the first try. Joe Hall, PK superintendent, was heard to comment, "It is unbelievable to me that the divers were able to do such intricate work underwater in zero visibility."

Sunday morning brought typical

Hawaiian trade wind weather—bright sunshine and a warm breeze blowing across the expanse that was soon to become a harbor. Andy, dressed in his diving outfit with Kirby-Morgan helmet, swam down to the DEMAG and entered the cab of the machine.

Once settled behind the controls, Andy requested hydraulic power be turned on. He was told via diver telephone, "Power on." He carefully tested the controls. They worked! The DEMAG slowly moved about six feet from the steep bank down which it had slid and stopped. It would go no further.

Back outside the cab, Andy felt his way around the DEMAG. He found piles of coral rubble in and around the tracks, as well as in front of the machine. For the rest of the day, the two divers cleared away tons of rubble so the DEMAG could continue its journey to shore and become, once again, an air

breathing monster.

Early Monday morning, Andy again sat at the controls of the DEMAG. By placing the end of the bucket against the hard bottom, he was able to raise the front of the DEMAG. This caused the loose coral rubble to settle under the tracks, and when Andy brought the front of the DEMAG down, the tracks could move. Topside, two Cat D-8 tractors, one pulling on a cable from the front of the cab, the other from the back of the cab in the opposite direction, were able to turn the DEMAG and align it with the ramp leading out of the partially dug harbor. After more rigging and clearing away of rubble, the DEMAG was finally ready to walk its way up from the bottom of the sea.

The big rig started up the ramp with little problem, but suddenly stalled. There simply was not enough power in the loader's hydraulic system to move the 350-ton DEMAG up so steep a slope. The D-8 tractors were again called upon to help. Slowly, haltingly, the DEMAG began its climb. Occasionally, divers Andy and Murph stopped the climb and left the cab to inspect the tracks and remove problem coral, and to check the wire slings. Then it was back to the controls for another climb.


Andy told me, "It took us about four hours of diving time to get the rig out of the water. But a lot of that time was used to double check that everything was going okay. Actual moving time of the DEMAG was no more than half an hour." A job many thought impossible was done with skill and craftsmanship. Joe Hall put it this way: "Not a stanchion, a rail, a bolt or a grease fitting was damaged in any way."

Once the rig was topside, its electronic, electrical and mechanical parts were dismantled, soaked in distilled water, and oiled. The DEMAG was valued at nearly \$3 million. Repairs and replacement parts cost about \$400,000; diver and related fees amounted to only \$30,000. A monumental salvage task had been accomplished economically because skilled professionals had worked together.

The DEMAG was salvaged, repaired and put back into service by May 3, just 40 days after the accident. And that's the way it was with the DEMAG job in Hawaii in the spring of 1983.


"The Way it Was" researches, reviews, and comments on the broad range of past diving events, be they technical, historical, or side-splitting comicalities. Your comments, suggestions, photographs or questions about the way it was in the yesteryears of diving are welcome. This is your column too. Address inquiries to Aqua-Field Publishing Co., Inc., 66 West Gilbert Street, Shrewsbury, NJ 07702.

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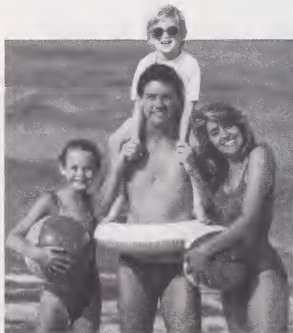


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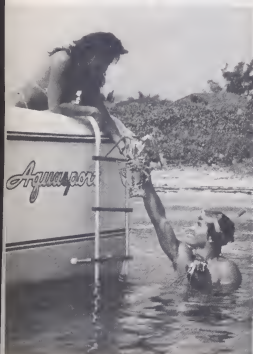
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Safety Through Education



BY LINDA REEVES

A Snorkeler's Paradise

Fresh water or salt, Florida offers excellent snorkeling from the Panhandle to the Keys.

Florida has been home for most of my life. For a water person there is no better place to enjoy year-round diving and snorkeling. Only mask, fins and snorkel are needed to enjoy Florida's vast underwater world of reefs, wrecks, caves, treasure hunting and lobstering.

Florida has over 8,000 miles of coastline and over 4,000 square miles of freshwater lakes, springs and rivers. The state's clear, warm waters, both fresh and salt, offer snorkelers some of the best underwater conditions to be found anywhere.

Many residents and visitors consider snorkeling one of the best things to do in the Florida Keys. In the last five years, over 3 million people have visited John Pennekamp Coral Reef State Park located in Key Largo.

The reef system runs continuously on the Atlantic side of the Keys from Key Largo to Key West and beyond. Crystal blue waters cover rich, colorful coral gardens on reefs which are among the world's most beautiful. Thousands of the fish can be found in shallow water perfect for snorkelers.

Linda Reeves is a Florida-based writer/photographer whose work has appeared in many regional and national publications.

A boat is necessary to reach many of the reefs which lie from five to 10 miles offshore but the boat ride is usually short and pleasant. To get you out to the reef, the Keys offer a wide range of boat rentals and charter boat services. Just check the yellow pages in the local telephone directory or inquire at one of the many dive shops.

Lovers of the wind can choose from an array of sailing vessels in the Keys and sail to the reefs. America's Cup Winner and snorkeling enthusiast Dennis Connors has a specially designed 54-foot catamaran, the *Stars and Stripes*, for snorkel trips out of Key West. Some cruise operators specialize in half or full day reef trips and family snorkeling outings.

If you are hooked on snorkeling, but have a problem with boats there are several places in the Keys where shore diving is excellent.

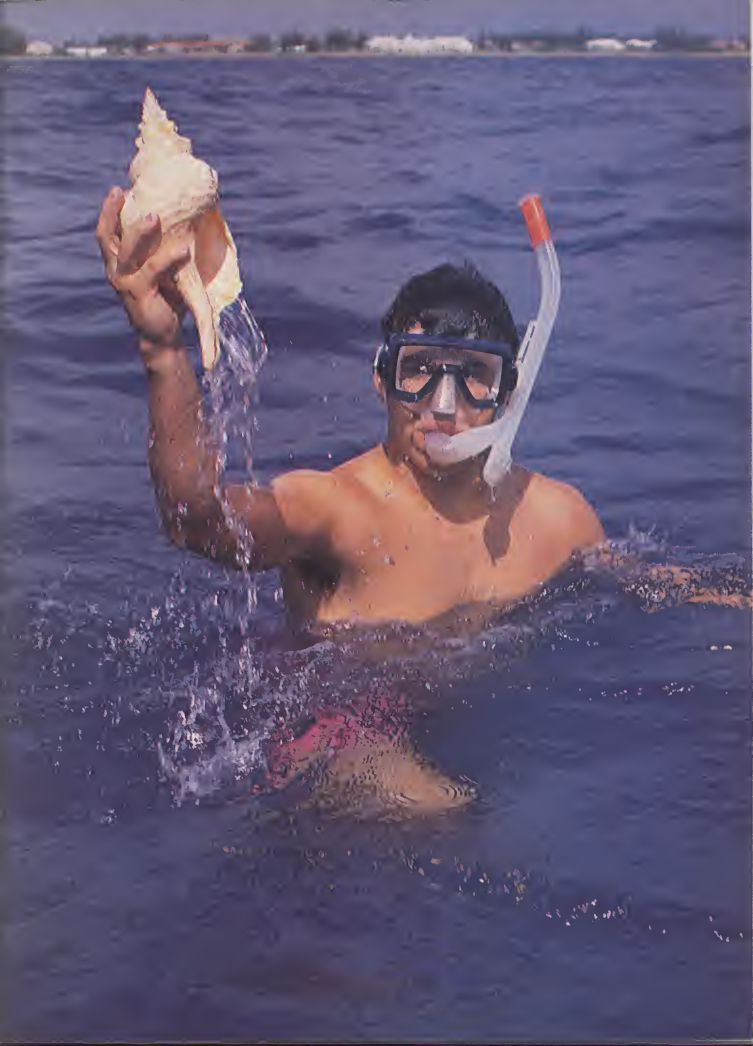
One place is the Florida Bay anywhere along the Overseas Highway, which extends for 180 miles from Key Largo to Key West. Here you will find plenty of seagrass beds, sand flats and rocky bottoms to explore. Don't expect to find coral reefs and large schools of fish. The in-shore sights are limited to small fish, sea horses, invertebrates and other small sea creatures. In addition, the bay is an excellent place for lobstering and shelling.

The Key Largo Undersea Park is another popular destination for snorkelers. The acre-wide snorkeling park is located in a sheltered lagoon leading to the Atlantic Ocean. A filtering system purifies the lagoon, providing clean water year-round. An underwater tour guide leads snorkelers around the lagoon, pointing out the resident marine life. The swim around the lagoon includes wreckage of a Spanish treasure galleon, anchors and cannons, an undersea marine research center, and underwater art studio and an underwater hotel.

Cheeca Lodge in Islamorada recently opened a snorkel trail off Cheeca Beach. The underwater nature trail is a perfect place for the kids to be introduced to snorkeling and learn something about the ocean. The sand and sea grass bottom is full of tiny sea critters and friendly, gaudy tropicals. The nature trail is clearly marked for snorkelers and features the scattered remains of a Spanish galleon.

The Keys are only a beginning when it comes to Florida snorkeling. The mighty Gulf Stream works its clear water magic along the East coast from Jacksonville to Miami, providing ideal conditions for shallow water exploration.

If your thoughts turn to lost treasure of Spanish galleons, you will want to try some of the snorkeling spots near



Jupiter. This section of Florida is known as the Treasure Coast. Many treasure-laden galleons as well as British and American ships were lost on the treacherous shallows along this coastal area. In one case, 10 ships of the 1715 silver fleet went down between Sebastian inlet and Fort Pierce. So far, 30 million in gold, silver and jewels has been recovered. Coins are still found in the shallows just off the beach.

Many wrecks lie within swimming distance of the beach. Shallow patch reefs and rocky reef chains run continuously along the coastline from Vero Beach to Stuart and beyond. Many are located close to the beach, often in less than 12 feet of water.

If you happen to be on the Treasure Coast during lobster season, which runs from the end of July to March, you might want to try your luck at grabbing one of this area's real treasures, a Florida spiny lobster. In this neck of the woods you can expect to wrestle a 12- to 14-pounder from under the rocks just offshore. This area of Florida is called "Big Bug Territory." There is intense competition for the lobsters during the first days of the season. Last year, over 5,000 lobster hunters registered for a single dive shop's Big Bug contest.

If you're a snorkeler who enjoys swimming in beautiful water and wants to take in some magnificent underwater sites, one location that is hard to beat is the Palm Beach County coast from Palm Beach to Boca Raton.

For a start, you'll enjoy some of the state's clearest and warmest waters. The patch reefs are lush and teeming with more things to see than you'll have time available.

The reefs off this section of Florida's coastline are caressed by the Gulf Stream current, which flows closer to shore here than anywhere. The clear, warm waters of the Gulf Stream are truly one of the great wonders of the world, and a tremendous asset to Florida.

The current along this coastal area varies from day to day. Some days it runs as swift as a greyhound and other days at a snail's pace. Be sure to check conditions at a dive shop or ask a lifeguard before venturing offshore. Snorkeling in a current can be very tricky.

Near-shore reefs for snorkelers along Palm Beach County are mostly colorful rock reefs. The reefs are carpeted with a layer of green and red algae that attracts hundreds of grazing fish and other forms of marine life. The dark crevices of the rocks provide excellent

hiding areas for many sea creatures.

The local dive operators can tell you how to get to the best snorkeling spots. Some of the more popular areas are located along the public beaches and inlets. These areas are easily accessible and usually have lifeguards.

A short distance from Lake Worth Public Beach is a good area for sightseeing and shelling. Another good spot is located about five miles south along the south side of the Boynton Inlet. Many of the same species found on the outer reefs can be seen along the inlet wall. The water clarity is usually excellent but you have to be there on a rising tide.

The rock reefs off the communities of Gulf Stream and Briny Breezes are interesting spots for beginners. Here, just a short swim from the beach, is a ledge full of sealife.

A shipwreck located in about 20 feet of water off Delray Beach is an excellent snorkeling spot. The British steamship *Inchulua* went down in a hurricane in 1903 and remains broken in five pieces and scattered about 150 yards offshore. An early morning swim to the wreck may be the best time to spot the big school of tarpon which has claimed this site. The coral-encrusted wreck is loaded with small darting tropicals, tiny invertebrates and large snappers.

A popular snorkeling spot in Boca Raton is Red Reef Park. The reef is located just off the public beach and is great for the entire family. Here you will find cruising barracudas, brightly colored wrasses and, if you look in the nooks and crannies, you might spot an octopus.

Moving from the Palm Beaches south to Fort Lauderdale, the inshore reefs along the coast are very similar and the distance from shore and depths are about the same. The Fort Lauderdale reefs parallel the beach and are located within snorkeling distance. Just remember: don't get so entranced that you forget what is going on around and above you in the water. Fort Lauderdale beaches are usually crowded and heavily used by speedboats, windsurfers and catamarans. An important rule of thumb and a Florida law is to carry a divers down flag while in the water. For those beginners who may not know, this bright red flag with a white diagonal stripe is the sportdiver's symbol and warns boats that divers and snorkelers are in the water.

From Fort Lauderdale to downtown Miami, the seafloor is a graveyard for shipwrecks and a wreck lover's delight. More than 36 wrecks have been placed

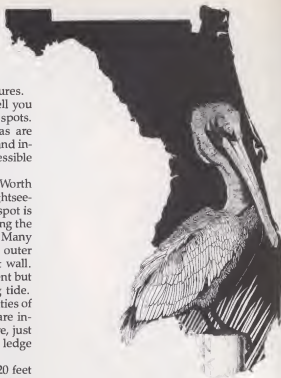


Illustration by Tom A. Russell

offshore by the county's artificial reef program to increase marine life and enhance Miami's underwater environment. Retired ships are purchased, cleaned and sunk to become fish attractors and homes for sea creatures. Unfortunately, most are located in deep water and are not suitable for snorkeling.

There are a few good snorkeling areas off Miami's beaches but remember, this area is also busy. Probably the most popular snorkeling site is about 15 miles south of the city at Biscayne National Monument.

The reefs are shallow and among the most beautiful in Florida. You can expect to find large schools of reef fish, hard and soft corals and brilliant sponges. The reefs are lush, full of life and protected from collecting of any kind. An added treat in the area is several old shipwrecks which lie broken, scattered and waiting to be explored.

The beautiful emerald-green waters, breathtaking snow-white beaches and unhurried friendly atmosphere of Florida's northwest coastline known as the Florida Panhandle lure millions of tourists every year. From Panama City to Pensacola, the nutrient-rich Gulf waters are loaded with marine life and offer fine snorkeling.

St. Andrews State Recreational Area located in Panama City is one of the most popular snorkeling areas on the Gulf Coast. Its 1,063 acres of white sandy beaches is known for its unusually clear water. Just off the beach runs an

(Please turn to page 78)

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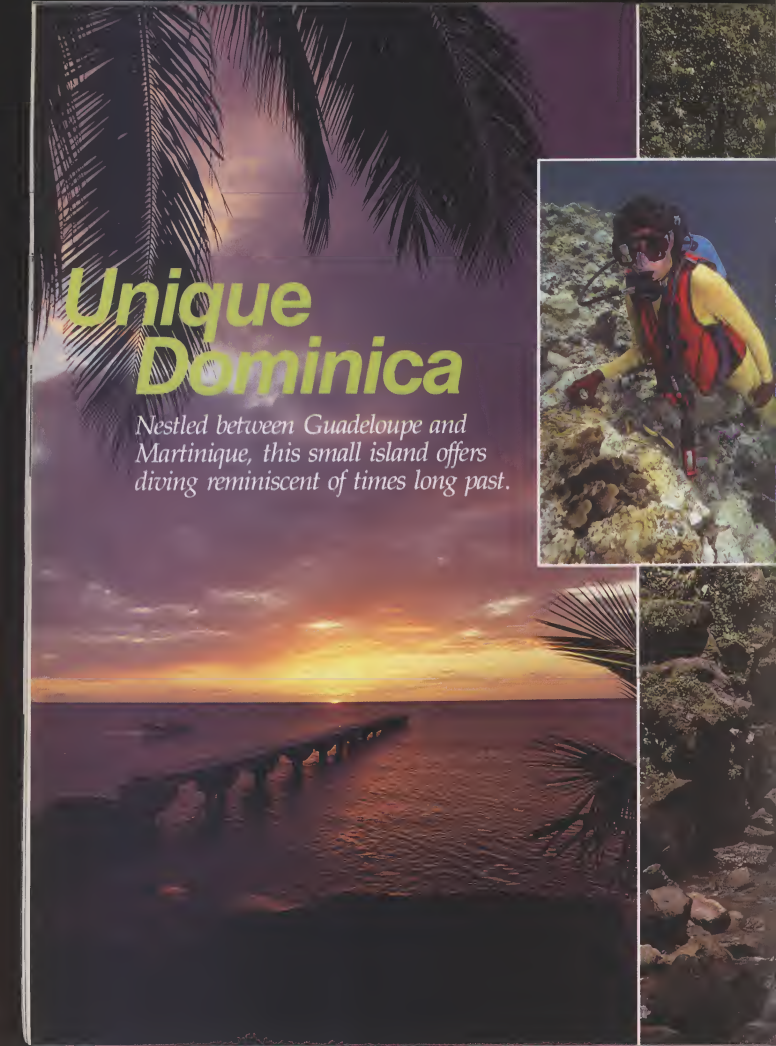
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Martinique, this small island offers
diving reminiscent of times long past.*





Sunsets on Dominica provide a peaceful ending to every day. Diver explores a Dominican reef while hikers cool off beside Trafalgar Falls. A school of soldier fish is encountered near Scotts Head.

BY TOM CAMPBELL

Dominica... oh sure...
Dominica. I can do that.

Now that I had a photo assignment all I had to do was find what I soon discovered to be the most beautiful, unspoiled island in the Caribbean. It would be the warm, friendly people, the breathtaking scenery, and the spectacular diving which would qualify Dominica as truly an island paradise. Pronounced Domin-ee-ka, this small island is not to be confused with the Dominican Republic. Surrounded by the rugged Atlantic Ocean to the east, and the tranquil Caribbean Sea to the west, Dominica lies in the inner arc of the Lesser Antilles. The island is 29 miles long and approximately 15 miles wide with a total area of 290 square miles. Dominica is the most mountainous of all the Caribbean Islands with its highest peak, Morne Diablotin, reaching nearly 5,000 feet above sea level.

This lush and verdant country is almost entirely tropical rain forest. There are hundreds of rivers and freshwater lakes, and dramatic waterfalls abound. Although portions of Dominica are cultivated—bananas, coconuts, and limes

Tom Campbell is a professional nature photographer specializing in the marine environment. A 30-year veteran diver who was assigned to a U.S. Navy SEAL team in Vietnam, Tom has also been a NAUI dive instructor for 25 years.





Visitors cross an
"Indiana Jones"
bridge.

Travel Tips

Getting There

American Airlines, British Airways, Air Canada, Air France, Eastern, and Lufthansa fly into Antigua, Guadeloupe, Martinique, Barbados, St. Lucia and Puerto Rico. From these islands, inter-island flights connect to Dominica. There are no direct flights from the U.S. Transfer Points are Antigua, Barbados, Guadeloupe, Martinique and Saint Lucia. Airlines providing service are Air Carib, Air Guadeloupe, Air Martinique, Air BVI, and LIAT. LIAT Airlines is notorious for not shipping baggage on schedule. Fragile gear such as cameras, etc., will not be treated with special care and overweight charges are strictly imposed for any baggage that exceeds 44 lbs. or 40 kilos upon departure.

There are two airports on Dominica, Melville Hall on the Northeast end of the island, which is an approximately one hour and 20 minute drive from Roseau, and Canefield on the southwest end of the island. Smaller groups are advised to fly into Canefield which is located very close to the dive resorts. Canefield cannot accommodate larger jets required to transport bigger groups. There is a US\$6 departure tax.

Tours

Ken's Hinterland Adventure Tours, P.O. Box 447, Roseau, Commonwealth of Dominica, East Caribbean. Phone (809) 448-4850.

Weather

Tropical, temperature varies from 75 degrees F to 95 degrees F. Rainfall is frequent in the higher rain forest regions. The south and west ends of the island gets approximately 40 inches of rain with little water shed. December through March are the coolest months. A rain slicker and hiking boots are recommended if you plan to explore the island wilderness, especially the boiling lake. Lightweight clothing and casual attire are appropriate everywhere on the island.

Water temperature varies between 75 degrees to 85 degrees F. Lycra skins or 1/8-inch wet suits are recommended for warmth and protection. Visibility averages from 70 to 150 feet.

Accommodations

Dive Resorts: Dive Dominica, Castle Comfort Diving Lodge, P.O. Box 63 Roseau, Commonwealth of Dominica. Phone (809) 448-2188, FAX 809-44-86088. Derek Perryman is the owner/operator. A two-tank boat dive is \$52.

Anchorage Hotel, Waitaikubuli Dive Center or Ports Mouth Beach Hotel, dive operator contact - Fitzroy Armour, Anchorage Hotel, P.O. Box 34, Roseau, Dominica, W.I. Phone (809) 448-2638, FAX (809) 448-5680.

Prices for the Anchorage Hotel are about the same as Dive Dominica,

are the main crops—most of the island remains virgin rain forest. In some regions up to 300 inches of rain falls annually, enabling Dominica to export water to its drier neighboring islands. Dominica lacks miles and miles of sandy beaches, but it has also been spared the overbuilding of tourist hotels and shopping malls found throughout so much of the Caribbean.

When hiking through quiet forest trails, it is difficult to imagine Dominica's turbulent political past. The island was discovered by Christopher Columbus on Sunday, November 3, 1493, and named *Dominica* after the Latin word for that day of the week. Due to the lack of safe anchorages and rugged terrain surrounding Dominica, Columbus did not land to explore the island. This was probably wise as the only inhabitants at the time were the fierce Carib Indians

about \$100 per person, per day including room, meals and diving.

There are several other excellent hotels and resorts that offer wonderful cuisine and a friendly atmosphere. Some are on the coast while others offer a quiet retreat in the mountains or the rain forest. Transportation must be arranged to one of the dive operations as none of the other hotels are equipped with boats or tanks.

Documents Required

Proof of citizenship and return airline tickets are required.

Currency

The U.S. dollar is worth EC \$2.66. U.S. money is accepted everywhere. A cab ride from the Castle Comfort or Anchorage Diving Resort is approximately 50 cents each way into Roseau.

Driving permits cost \$12. Car rentals are reasonable and cars may be delivered to your location. Driving is on the left-hand side of the road.

Electricity

The island uses 220-240 volts, 50 cycles. Having your own transformer or adaptors is recommended.

Further Information

Contact: Dominica Tourist Board, P.O. Box 73, Roseau, Dominica, W.I., Phone (809) 448-2351/2186, Telex 8649.

(from which the name Caribbean is derived). Ferocious warriors, the Caribs are said by some historians to have been cannibals, believing that by consuming their strongest enemies, they would become more powerful themselves. Irvin Auguste, the current chief of the remaining Carib Indian community claims this was not the case. Though their descendants now live peaceful lives as farmers, fishermen, and basket weavers, the original Caribs proved to be formidable foes for European settlers coming to the New World.

England and France both claimed ownership of Dominica at various points in history. Vestiges of British tradition and French influence are still very apparent in the Dominican lifestyle. In 1978, Dominica gained independence from the British Crown and is now a self-governing democratic republic. Dominica's current prime minister is Mary Eugenia Charles, a widely respected spokesperson for the needs of underdeveloped countries in the Caribbean.

The island is still recovering economically from the devastating hurricanes, David (1979) and Hugo (1989), which destroyed countless homes, public buildings, roads, and devastated the agricultural industry. Tourism is just beginning to become a source of revenue for Dominica which has much to offer in natural beauty underwater and above.

Roseau, the capital, is located near the southwest end of Dominica's picturesque coastline. The capital has a population of approximately 30,000 people. A variety of quaint little shops, restaurants, and business concerns will charm you, but do not expect to find many boutiques and duty-free stores. Do visit "Jaws" and try a real treat—sourpice cream. Fresh fruits, vegetables, and local specialties such as "mountain chicken" (actually huge mountain frogs) are deliciously prepared with a hint of French cuisine.

There are a number of sight-seeing tour companies featuring trips for adventuresome nature lovers, bird watchers, hikers, and photographers. I used Ken's Hinterland Tours several times during my six-week stay in Dominica. They provided top-notch vehicles with excellent guides. Lambert Charles, a guide who worked closely with me, was exceptionally well-connected on the island. His knowledge of local flora and fauna, as well as familiarity with interesting and historical sights, was most impressive. Very concerned with environmental preservation, Lambert never passed up a discarded can or piece of trash if he could carry it out in his backpack.

You should plan to visit the Carib Indian Reserve at the northeast end of the island not far from Melville Hall Air-

port. It is fascinating to watch the Carib craftsmen at work building their dugout canoes from the giant gommier trees, or see them weaving their beautiful baskets. Also you should not miss seeing the dramatic northeast coastline bordered by the Atlantic Ocean. Be sure to bring your wide lenses and polarizers for there are some wonderful photographic opportunities. Hiking through the rain forest with its lush vegetation, breathtaking waterfalls and hot springs is definitely recommended.

Diving Dominica is a rare treat. If you want to dive an island paradise that sees fewer than 350 divers a year, this is it! You will experience what many top diving areas were like 10 or 15 years ago. With only a limited number of dive boats available and most of Dominica's coastline unexplored, you are unlikely to find overcrowding at any dive spots. Underwater you will find an unspoiled paradise that offers dramatic drop-offs, pinnacles, arches, and spectacular walls that drop away into an abyss of deep blue water. The proliferation of sponges and small fish life create a kaleidoscope of colors.

Several diving locations on the island are well charted by the experienced dive guides I traveled with at both Dive

Dominica and Anchorage Resorts. Dive Dominica has two dive boats, a smaller open boat that is fast, and a 33-foot cabin boat with shade and a "semi-private" head. The larger boat will comfortably carry 12 divers. Derek Perryman who operates Dive Dominica is extremely knowledgeable, safety conscious, and very accommodating to divers' needs. The fresh fruit and water Derek brings on board are most welcome! The cost per day is approximately \$100 per person which includes two tank dives from the boat, one in the morning and another in the early afternoon, unlimited beach diving, lodging at Castle Comfort Resort, and two delicious meals prepared at the resort by Mrs. Perryman and her hard-working staff. Try the pancakes and the callaloo soup.

Night diving is excellent just off the beach at both Dive Dominica and the Anchorage Resort close by. I saw four frog fish on one reef crowded by dozens of other night dwellers, such as conger and moray eels, lobsters, parrot fish, spotted drums, trumpetfish, shrimp, and a few critters I did not recognize. The sand bottom surrounding the reef was almost as exciting as the reef itself. A variety of crabs, goat fish and snake eels kept my strobes recycling constant-

(Please turn to page 75)

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What's Current in Cozumel?



Although the diving's great, there's always a current and divers should patronize only established operators.

Cozumel, located just 12 miles off Mexico's Yucatan coast, has an image problem. It's a place many divers visit early in their underwater careers, sometimes even taking their open water check-out dives for certification there. Then, after a couple of visits, they move on, never to return even though Cozumel is consistently rated as one of the world's 10 best dive sites.

I know that's what happened to me

M. Timothy O'Keefe is Editor-at-Large for the Florida Sportsman and a professor of journalism at Central Florida University.



... About a Knot and a Half

and, according to several of Cozumel's dive operators, it's an all too common pattern. The last time I visited Cozumel was in 1978. I'd made two extended trips in the 70s and I figured I'd seen enough. Plus I quickly tired of the motor-sailer boat routine. Back then, you had to devote an entire day on these snail-paced craft just to get in two dives. On other islands, I could dive twice and get back before lunch to take a break from the sun.

I took another look at Cozumel recently and I was impressed with the quality of many of its new dive sites. In fact, the diving was so good, I wondered why I'd stayed away so long.

I'd forgotten how clear Cozumel's water stays. After a year of traveling around the Caribbean and often encountering visibility of 50 feet or less, Cozumel seemed a godsend.

Cozumel's visibility underwater is never less than 100 feet and sometimes reaches as much as 250 feet. Cozumel's water clarity is unmatched anywhere else in the Caribbean, including such famed dive destinations as Grand Cayman and Bonaire, not to mention the incredible sponge formations—a couple were the best I've ever seen, anywhere. But it's easy for dive writers to get carried away in their site descriptions, so this time I'll let an expert do the talking.

Marine biologist Dr. Douglas Fenner, of Pacific Marine Research and the Seattle Aquarium, says Cozumel's sponge growth "is some of the best in the world, if not the best." Dr. Fenner, who has studied Cozumel's marine environment since 1980, says the spectacular sponge development is caused by continual currents that constantly bring food to the reefs. "Elephant ear sponges, which grow as large as 10 to 12 feet across, are probably the biggest anywhere, and barrel sponges are very common," he says. "I have taken pictures of 150 different species of sponges in Cozumel, but on each dive I'm seeing a new species I've never seen before.

Dr. Fenner also says Cozumel "excels in its underwater topography and

underwater caves. Not only are the sponges and caves better than anywhere else in the world, the corals equal any you'll find elsewhere in the Caribbean.

And fish are plentiful, too—more than 230 different species have been counted so far. Dr. Fenner says he's never seen as many queen angels as he's seen here. In addition, Cozumel has its own special fish, the "splendid toadfish" which is found nowhere else. The splendid toadfish, growing between 12 and 16 inches long and found in holes, is among the world's fastest eaters. It can suck in another fish in just six milli-



Divers, opposite, depart from the Stouffer Presidente. Motor-sailers are still used at Cozumel to transport divers

seconds, faster than the blink of an eye!

Because the marine life is constantly nourished by ocean currents, all of Cozumel's diving is drift diving. Divers take advantage of the underwater winds by floating with the current, usually between one and 1½ knots. Drift diving allow divers to cover as much as an eighth of a mile or more, a far greater amount of territory than they otherwise could.

Once a dive is finished, divers ascend to the surface to find their dive boat, which has been tracking the air bubbles, ready and waiting to take them aboard. No wonder many divers abandon anchored boat dives and return again and

BY M. TIMOTHY O'KEEFE

again to float through Cozumel.

Cozumel offers an unusually varied selection of dive boats. Although I don't like them, the traditional, slow-moving motor-sailer is still the preference of those who want to savor their time on the water. These boats depart around 9 a.m., do a deep dive, then take a shore break for lunch, volleyball and snorkeling. Following the afternoon's shallow dive, the motor-sailers return around 4 in the afternoon.

But there are plenty of fast boats for those of us in more of a hurry. The speedier craft leave between 8 and 9 a.m., do a deep and a shallow dive, and return for lunch, allowing plenty of free

Is Cozumel Safe To Dive?

Because of a report broadcast twice on "Inside Edition," serious questions have been raised about the professional responsibility of Cozumel's dive operators, and rightly so.

As incredible as it may seem, the TV program showed a fellow in one Cozumel diver store telling the show's reporter he didn't have to be certified as long as he paid a bribe to the boat captain.

After investigating several recent deaths, "Inside Edition" bluntly warned divers they were risking their lives to visit Cozumel. This is one of the rare instances—if not the only one—in which any of the news or entertainment media have declared that a popular dive destination should be off limits because of its unsafe diving practices. Not just a few operators were indicted in the program, but the whole island and everyone on it!

It's going a bit far to advise that no one in Cozumel is fit to dive with. This was a matter of overkill. Some Cozumel dive operators are good enough to be counted among the best.

Still, it's true some of Cozumel's dive shops have been too lax, that operators have sometimes been more interested in sending out full boats than in monitoring each diver's ex-

perience level. And that laxity may have led to some accidents.

But many of the group leaders who bring divers to Cozumel are equally, if not more, responsible for the problems. It's a risk to put either newly certified divers or divers taking their open water dives for certification in Cozumel's strong currents. Yet it's done, time after time. One shop owner wanted to take his brand new graduation class to Punta Sur immediately following their last open water check-out. Punta Sur should be tackled only by those with considerable skill under their weight belts. One Cozumel divemaster told me he wished groups would arrive already certified, or take their check-out dives from the beach.

Further, there's been the tendency of too many groups to party in the discos until the early hours, then go out diving just a few hours later: sort of "party til you drop"—into the current. Hangovers obviously cause many problems, including muddled thinking and slow reflexes. There's also the potential threat of dehydration from too much alcohol, a factor known to increase the likelihood of contracting the bends.

And the habit of many divers of drinking nothing but beer at lunch, and dinner and in-between ("because

the water's not safe") also needs to be altered. You don't have to party all night to become dehydrated; after several days, a steady diet of beer or any other alcohol will have the same effect.

Yes, diving in Cozumel could have been safer in the past, and there's enough blame to go around for Mexicans and Americans both. Prompted by "Inside Edition" to get their act together (the critical show may be the best thing that could have happened to improve diving safety), 28 of Cozumel's largest dive shops have banded together to form the Cozumel Association of Dive Operators (CADO). Accounting for more than 90% of all dives made in Cozumel, the CADO members are dedicated to providing safer conditions for sport diving. They also intend to increase awareness of Cozumel as a world-class dive destination.

As part of its on-going safety program, CADO is establishing a set of safety standards for all members to adhere to. Among the new rules that members have agreed upon:

☐ Visiting divers should present their log books along with their certification cards so their expertise level can be better evaluated.

☐ Each diver should carry a pressure gauge, depth gauge, buoyancy compensator and octopus (spare regulator).

☐ Persons who are not certified, but have completed a resort course, can dive no deeper than 30 feet and must be accompanied by an instructor.

(Please turn to page 59)

time for shopping, exploring or for making a third dive in the afternoon. For divers who prefer small groups, Cozumel has numerous "six-packs," small, fast boats which carry only six divers.

Cozumel has almost as many dive shops as it does dive boats—more than 40, about the same as the number of dive sites. Located on almost every corner, they are as plentiful as convenience stores and fast food outlets in the States. There are too many of them for the traffic.

The best reefs are found well offshore at the southern end of the island, and can only be reached by boat. The three-mile long Palancar Reef is one of the most famous dive spots in all the Caribbean. Riddled with tunnels, caves and ledges, the Palancar has seven different sites

which vary in depth from 35 feet to over 80 feet. Nearby Colombia Reef holds large schools of grunts and snappers, while at Punta Sur divers explore an exciting network of deep caves filled with marine life. Santa Rosa Reef is noted for its huge coral mounds as tall as many buildings. In many places, big grouper hoping to be hand-fed readily approach divers.

Since Cozumel's reefs are part of a marine sanctuary, spear fishing and taking of coral and live shells are prohibited. Good buoyancy control is also stressed so divers will stay at least three feet above the corals and thus avoid touching the fragile reefs with their fins and other equipment.

Although I'd been away for 12 years, circumstances placed me in Cozumel twice this past spring. The two trips provided a good comparison of the



types of diving Cozumel offers.

In April, I was fortunate enough to stay at the Stouffer Presidente, considered the island's finest hotel. Its dock is also one of the best places for snorkeling and feeding I've encountered. Several hundred fish congregate in front of the Stouffer every morning, waiting to be thrown crumbs or sausages or anything else edible. The only catch is that you have to get in the water early to enjoy the spectacle. Once the dive boats start arriving around 8 a.m., the fish disperse and the feeding is never as good the rest of the day.

Fantasia Divers, located on the Stouffer grounds, was a good outfit. The guides spoke English well and gave detailed descriptions of what we would encounter. Then it was over the side and into the current. The drift on Santa Rosa reef is typical of most of the sites. We floated above colorful coral mounds. The current was too fast to stop and photograph unless you could find a wall to hide behind or a cave to duck into.

I did duck into a cave for photography, and just as I was finishing, an object seemingly the size of a miniature submarine suddenly shot through the opening. The grouper had appeared out of nowhere, and had at first looked like it was going to speed straight through and out the other side. Instead, the huge, dark apparition turned and came back to me, stopping about three feet away. My strobe flashes didn't seem to bother the fish, but it must have been disappointed that I had brought no morsels to supply as payment for modeling, since it gave me time for only three frames before vanishing.

On my second trip, I dived with Tom Hartdegen, of Dive Paradise. With all the Caribbean traveling I do, Tom considered me somewhat of a jaded diver who wouldn't be easily impressed; he was correct. I've made a lot of good dives, but very few underwater sights really excite me. Well, that day Tom provided me with sensory overload—diving so spectacularly colorful that weeks later, I still think about it.

Tom is one of the dive operators concerned about the fact that many divers start their career here but never come back. He feels it's because people either aren't aware of how good diving can be or if they are, they've found it too difficult to find a dive boat to take them to the best sites. The regular mil run comes first, the exceptional diving (because it is so far away) is reserved for perhaps one day a week.

To make the far reaches more accessible, Tom has instituted his Experienced Diver Program for the truly advanced diver seeking Cozumel's finest and most challenging diving. With as few as four divers and no more than

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Travel Tips

Getting There

Cozumel is served by many different airlines, from all parts of the country. Although it was once true that most of the visiting divers were Texans, since they were the closest and enjoyed the most direct service, now you're just as likely to encounter people from California, Florida and points north. Direct flights now come from New York, Chicago, Denver, Miami, Dallas and Houston. Airlines serving Cozumel include American, Continental and Mexicana. Depending on their point of origin, planes may stop in nearby Cancun before reaching Cozumel. You may no longer need to reconfirm your reservation online, but double-check. If possible, try to get a return boarding pass on the trip down. Do show up at least an hour before departure, to avoid standing in line, if for no other reason. There is a \$10 departure tax, payable in US\$ or pesos.

Where to Stay

Cozumel has as many different levels of hotel accommodations as it does dive sites. The Stouffer Presidente is considered the island's best hotel; it's also one of the southernmost hotels and therefore one of the closest to the reefs. The Stouffer has perhaps the best hotel beach, a wide sandy lagoon next to the outdoor dining room, a huge thatched building. It's formal dining room is Cozumel's best, the food and service impeccable. For the most part, the Stouffer mood is very casual. And don't forget the excellent early morning snorkeling/fish feeding at the boat dock. Two or more moderately priced hotels that cater to divers almost exclusively are Casa Del Mar and La Ceiba, located almost across the street from each other.

The bargain approach to Cozumel is to buy a hotel's dive package or join one of the many dive shops that frequently visit here. The shops' prices often include air, hotel and diving. They also tend to stay at the cheapest hotels.

Picking a Dive Operation

The one thing you don't want to do is use the cheapest dive shop, be-

cause you're apt to get service and safety considerations to match (see accompanying article on diver safety in Cozumel). Care in selecting a dive operator isn't something you normally need to consider but with over 40 dive stores, Cozumel has more shops than it can support. Some of them don't make much money and they cut corners to stay in business. For reasons outlined in the accompanying article, be sure you're scheduled to dive with a CADO/chamber member.

Dive prices are expected to increase in Cozumel from about \$40 per day to \$50, one of the first across-the-board increases in several years. For two tanks, that's still one of the lowest prices in the Caribbean.

Food and Drink

Yes, Montezuma's Revenge still flourishes in Cozumel, but it's not impossible to avoid. I did on both trips this past spring. The better hotels serve purified water and ice, and wash their vegetables thoroughly in an iodine solution. The small local eateries don't. The old rules of drinking only bottled water and eating only those fruits and vegetables that must be peeled first are good ones to follow. Brush your teeth with bottled water and never drink from the taps. If all precautions fail, prescription-strength Imodium is one of the most effective remedies available.

Documents Required

A passport is always the most desirable identification for foreign travel. Otherwise, a voter's ID or birth certificate will do. A driver's license will not. Be careful not to lose the Mexican immigration form; the officials sometimes get testy if it's misplaced and getting a new one approved may take considerable time.

Currency

Although everyone happily accepts greenbacks, different hotels and stores give different rates of exchange. Some of the exchange rates are unfairly low, so you can be taken advantage of. Best bet is to convert spending money to pesos at a bank and charge what you can on your credit card. **\$**

six, he guarantees a special boat will go out every day. The only catch is that minimum of four: no drawback if you're traveling with friends, a potential problem if you're a couple or traveling alone.

Tom started me at *Punta Sur*, a spot known for its huge caverns and steep drop-offs. On one part of *Punta Sur* it's necessary to go to only 100 feet; we did another section called "the devil's throat" that took us down to 123. It is truly a phenomenal dive, a drift/swim through a series of caverns loaded with marine life, even well away from the light.

Next we went to a place Tom calls *Virgin Wall*, where the heavy currents are too much for average divers. After our surface interval, we jumped into the current for a real roller coaster ride. At the end of the formation, Tom dropped us behind a wall where the current wasn't nearly as strong. The angle of light striking the wall disclosed a riot of colors, sponges of many shapes and sizes including one great orange elephant ear sponge that measured 10 to 12 feet across, dwarfing a diver. This wall accomplished Tom's goal; I was damn impressed. So much so that we came back the next day and dived the wall again. I

think I could dive that wall for almost a week and never run out of photo subjects. The wall is wide, and it runs deep.

These advanced dives are done mostly with the aid of a computer. Everyone wears a computer (available for rental) so that there's plenty of back-up in case one of them stops functioning.

Shallow or deep, Cozumel offers plenty of sites that should content every diver of every skill level. If it's been a while since you visited, try Cozumel again. You'll probably be happy with most of the changes. And if you've never traveled there, now is the time to start.

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Hostess greets customers at El Caribeño restaurant at the Stouffer Presidente.

Cozumel Seafood Sampler

The uninitiated will discover in Cozumel that Mexican cuisine goes far beyond tacos and burritos.

Stouffer Presidente

Stouffer Presidente is Cozumel's best dining experience, whether in the large open-air restaurant or the formal dining room. A refreshing way to begin any meal is the Mayan Lime Soup.

Mayan Lime Soup

- 3½ oz. sweet pepper
- 3½ oz. onion
- 7 oz. tomato
- 1 lime
- 7 oz. of boiled chicken
- 1 tortilla
- 3½ oz. chicken broth

Slice and fry in the butter the sweet pepper, onion and tomato. Add the chicken broth, juice of the lime and a pinch of salt. When all the ingredients are cooked, add the chicken and the tortilla

Lobster and Raspberry Salad

Duck with raspberry is a well-known dish; this Caribbean recipe uses lobster instead.

- 1 shelled lobster tail
- 1 tsp. onion
- ¼ oz. raspberry vinegar
- 4 tomato slices
- 2 black olives
- salt
- lettuce

Cube lobster meat and coarsely chop lettuce. Slice the onion in rings. Put in a bowl and toss. Add a dash of salt and the vinegar. Serve on a plate decorated with 4 slices of tomato and 2 black olives.

Conch Fillet

Conch sometimes is bland but the Worcestershire Sauce adds a nice tangy taste.

- 1 conch peeled and filleted
- ½ oz. olive oil
- ½ oz. Worcestershire Sauce
- ½ Tbsp. white pepper

Place the conch fillet in a pan with the olive oil and cook over low heat. Add all ingredients and allow to cook for 5 minutes. Serve with rice.

Carlos 'n Charlie's

Carlos 'n Charlie's is one of Cozumel's most popular—and loudest—hangouts. For a place that stresses heavy-duty partying, the food is surprisingly good and very reasonable. The menu has more choices than you can possibly sample in a week, even eating two meals a day here. The barbecue is especially notable, but so is the seafood. To provide fast service, many of the recipes are very simple.

Pescado Borracho (Drunken Grouper)

Easy to prepare, with a different approach to cooking with wine.

- 1 fish fillet
- 3 tsp. cream
- ½ Tbs. butter
- ½ cup white wine
- 4 oz. sliced mushrooms
- oil for cooking

Lightly coat fish with oil and pepper and either bake or grill, depending on your preference. While fish is cooking, warm cream, butter and white wine and mix together. Pour the sauce over fish when it is plated, then add sliced mushrooms. Serve hot. Serves one.

Illustration by Laurie K. Doyle



Pepe's Grill

Pepe's has come a long way since I first visited it in the 70s. Back then, it was a small pleasant place that emphasized Mexican cooking. The new, very large Pepe's Grill is an upscale version of the old restaurant. You'll be hard pressed to find Mexican food among the steaks and seafood, but it's there—and just as good as ever. As the following recipes show, Pepe's menu is quite varied.

Shrimps Goviales

- 8 shrimp
- ½ oz. brandy
- ½ oz. white wine
- 1 Tbs. Worcestershire Sauce
- 3-4 drops soy sauce
- 1 tsp. lemon juice
- 4 tsp. orange juice
- 1 tsp. minced garlic
- 1 tsp. parsley
- butter for cooking

Melt butter in pan and add shrimp. Add brandy and white wine; mix. Add soy sauce and Worcestershire Sauce; stir. Add orange and lemon juice, garlic and parsley. Be careful not to overcook shrimp. Serves one.

Fish Vera Cruz Style

- 1 red snapper fillet
- 2 oz. white wine
- ½ diced bell pepper
- ½ chopped onion
- 2 small tomatoes or one large tomato
- 5 green olives
- 1 tsp. capers
- 1 tsp. soy sauce
- butter for cooking

Place all ingredients in pan except fish and simmer until cooked. Add fish and cook for 5 minutes. Serve with sprinkle of oregano and parsley.

Crepes with Tequila

It wouldn't be proper to omit Mexico's national liquor in at least one recipe. This is a wonderfully rich but definitely South-of-the-Border style dessert.

- 3-4 crepes
- 4 tsp. caramel sauce
- 1 oz. tequila
- butter for cooking
- 1 tsp. chopped nuts

Saute crepes in butter. Place on dish and form crepes into pyramid shape. Pour caramel sauce over crepes, then add tequila. Ignite tequila to make caramel more liquid. Add chopped nuts and serve. Serves one.

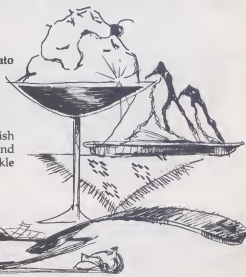
Mayan Coffee

A perfect way to end the meal, a coffee that is as distinctly Mexican as Irish coffee is Irish.

- ½ oz. Xtabentum, a Mayan liquor from Merida
- ½ oz. Kaluha coffee liquor
- 1 tsp. orange liquor
- vanilla ice cream
- sprinkle of cinnamon
- sugar
- 1 cup coffee

Use large champagne-style glass or a very large cup. Moisten edge of container and dip into sugar. Pour in liquors and hot coffee. Add ice cream and sprinkle with cinnamon.

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Don't go to the Galapagos...

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Go to the Galapagos...

if you don't mind cold water, currents, surge, and sometimes marginal visibility.

if you don't mind sacrificing some dive time for hiking on islands that are as interesting as the waters around them.

if you want to dive with big sharks.

if you are willing to give up some creature comforts in exchange for visiting one of the world's remaining wilderness treasures.

BY ERIC HANAUER

The Galapagos, Bottom to Top

The Galapagos aren't for every diver. It's quarter-inch wet suit diving on the equator thanks to the presence of the Humboldt Current, which originates in the Antarctic. You may have to endure some ordinary dives in the hopes of encountering sharks or whales or manta rays which don't always show up. But for anyone who appreciates the unique natural history of

the Galapagos, this can be the journey of a lifetime. The Galapagos Archipelago consists of 13 major islands, six small ones, and innumerable offshore rocks spread out over some 30,000 square miles of Pacific Ocean. Located about 600 miles off the coast of Ecuador, these volcanic islands were visited by a young Charles Darwin in 1835. His observations there led to his theory of evolution by natural selection, and the science of biology hasn't been the same since.

Although the islands belong to Ecuador, they are considered a resource for the entire world. A South American country with a struggling economy,

Ecuador can use all the tourist dollars it can get. But it has done a superb job of protecting this natural heritage. Foreign visitors are limited to 30,000 per year. No one is allowed to set foot on an island unless accompanied by a registered naturalist guide. No one is allowed to wander off the paths or to touch or otherwise disturb an animal. Consequently, the sea lions, marine iguanas, lava lizards, blue-footed boobies, penguins, and other indigenous creatures are bold and unafraid of man. The most difficult problem when photographing the islands' wildlife is getting it far enough away from the lens to focus. Even the most avid underwater photographer will burn three rolls of film topside for every one used below the surface.

A trip to the Galapagos begins with a hair-raising flight into Quito, Ecuador. As the plane banks sharply into a high mountain valley, the peaks of volcanoes protrude above the wingtips. Perched 9,300 feet above sea level, Quito is one of the world's highest capital cities. Despite its location near the equator, the climate can be brisk. Its architecture is a mix of colonial relics, modern high-rises, and a third-world concrete block.

For shoppers, Ecuador is a throwback to the halcyon days of the strong American dollar. Dinner at a fine restaurant is about \$5 per person, including drinks. Hand-knit woolen sweaters sell for \$10, leather jackets for \$70, and a room-sized, hand-woven wool carpet for under \$500. The only way to resist these bargains is to lock up your credit card. A better strategy would be to bring it and some extra cash to take care of your Christmas shopping early.

If you have a few extra days, Quito can be the jumping-off place for a trip into the Andean highlands. We did it by train, passing through mountain scenery reminiscent of Switzerland, with agricultural fields perched at seemingly impossible angles. We climbed the flanks of Cotapaxi, a snow-covered volcano, visited Inca ruins, and strolled through Indian markets held weekly in small towns. The scenic beauty of Ecuador is literally breathtaking, especially in the Andes where we never descended below 8,000 feet. Additional destinations for visitors can include the jungle headwaters of the Amazon to the east, or the Pacific seacoast to the west.

The trials and tribulations of travel were trivialized by the services of Metropolitan Touring, Ecuador's largest travel agency. Our guide, Maria de Lourdes Intriago, was as helpful as she was beautiful. For example, while we relaxed in the airport restaurant, she handled all check-in details for our group of 10, including the glut of baggage with which divers always burden themselves.

Eric Hanauer is an Associate Professor of Physical Education at California State University, Fullerton. His most recent book, The Egyptian Red Sea: A Diver's Guide, is published by Watersport Publishing Co.



Topside, a colony of marine iguanas are as photogenic as the green turtle below.

To consider these equatorial islands solely as a dive destination would be to miss half their appeal.



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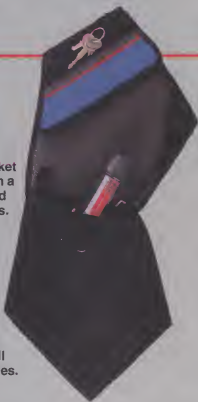
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The Galapagos is Ecuador's most popular tourist destination, and the vast majority do it aboard boats. Accommodations range from 90-passenger cruise ships to local fishing craft. Out of a fleet of some 100 boats registered for tourism, only nine are equipped for diving, and even these do not run dive trips full time. Consequently, demand exceeds supply, and the dive boats are booked about two years in advance. This is one reason why dive trips to the Galapagos aren't heavily advertised. We were fortunate to take advantage of cancellations and chartered two boats, each for a week. Because of the distances between islands, it would require two weeks to visit all the destinations covered here.

Both our boats, the *Encantada* and the *Beagle III*, are motor sailers about 60 feet long. The sails are used primarily for stability on long crossings in heavy swells; the vessels usually motor along at a leisurely pace. The *Encantada*, a former private yacht from Japan, is slightly larger and more comfortable, and geared more to North American standards. The *Beagle III*, a former research ship, cruises faster and is more laid-back and casual, with a more Ecuadorian approach to life. Food on both was plentiful and delicious, with only the cold-water diving saving us from an additional five pounds of unwanted body fat.

Rather than attempting to describe all the dive sites we visited, only my favorites will be covered, chosen primarily because of the marine life encountered. In researching the Galapagos, I read descriptions of the dive sites in other publications that didn't always mention the things I saw when I dived them. In fact, some writers thought a few of my sites were pedestrian, and I had the same opinion of some of their choices. This illustrates an essential point about Galapagos diving. Huge schools of fish and playful sea lions will accompany you on virtually every dive. Yet the water is cold (68 degrees on the surface in August), visibility marginal by tropical standards (40 to 60 feet), and the rocky background isn't colorful. Big animal encounters provide the major excitement, and the potential for them is always present. But because the movements of these animals are essentially unpredictable, nothing is guaranteed.

The underwater scenery is only a part of the Galapagos picture. Lots of incredibly interesting wildlife is found on land, and here the encounters are guaranteed. Furthermore, the scenery on these volcanic islands is amazingly varied, ranging from tropical rain forest in the highlands of Santa Cruz to the barren wasteland of Sullivan Bay's lava

flow. No trip to the Galapagos is complete, or even worthwhile, without lots of time spent on land. Therefore descriptions of underwater sites are accompanied by descriptions of land sites nearby.

Located off Santiago Island, *Cousins Rocks* will probably be your first introduction to Galapagos marine life. Rocky ledges are covered with yellow gorgonians, and vast schools of creolefish darken the water overhead. A relative of the Indo-Pacific *Anthias*, these basslets are the most prevalent fish on Galapagos reefs. They are called "gringo fish" by the residents because their pinkish color resembles the sunburned skin of American tourists. Whenever a tightly packed school opened up, we knew something big was about to swim through. Our first dive there was like a highlight film of local marine life, as one set of creatures after another passed in review. At 40 feet there was a school of large barracudas. Overhead, a squadron of well-fed eagle rays flew by, while green turtles slept among the gorgonians. Playful sea lions dive-bombed us, occasionally swimming to the bottom where they chewed on rocks, picking up some of them in their mouths. Even for California divers—who often encounter sea lions at home—these were a treat because of their numbers and their fearlessness of divers.

Sullivan Bay on Santiago Island is the site of a vast lava flow that transports one back millions of years to the days of a very young earth. Virtually nothing grows on this stark, black rock where the ripples of an 1888 eruption are forever frozen in time. Your imagination will discover shapes and patterns in the lava, like finding faces in cumulus clouds of a summer sky. For anyone looking to shoot a space movie on an alien planet, the naked wasteland of Sullivan Bay would make an excellent set.

South Plaza Island, just off Santa Cruz Island, is a rookery and playground for sea lions. These sleek marine mammals provide comic relief as they dive-bomb divers, biting at their bubbles, picking up rocks, and generally seeming to have so much fun that we couldn't help but be happy. Usually, only the females and pups display an interest in divers, while the bulls maintain a discreet distance. Only during the early summer breeding season do they make an appearance. Then they may act aggressive to protect their females. In the sand below lives a school of garden eels, but they seem a bit shy, perhaps owing to heavy sea lion traffic.

On land, hiking around the sea lion colony is every bit as good as diving with them. Walking on the sand beach, you can watch mothers suckling their

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young, while others nap or play in the surf. We observed one baby, apparently born just minutes before, still trailing its placenta as it sought its mother's teat. Land iguanas, looking like miniature dinosaurs, roam the beach and rocks around it. Vegetation is dominated by huge *Opuntia* cactus and bright red *Sesuvium* bushes. On the cliffs overlooking the sea, we watched flying swallow-tailed gulls, frigate birds, and especially the spectacular red-billed tropicbirds trailing long tailfeathers as they soared

above us.

There are times in diving when appreciation takes priority over photography, and you just take a deep breath and say, "Wow!" Descending the wall of *Gordon Rocks*, the first thing I saw was a huge green turtle. It was followed by three spotted eagle rays swimming in a circle, then a school of 50-pound dog snappers. This was still the first minute of the dive, and I had not yet removed my lens cap. Soon afterward, a school of about 100 amberjacks, 3 to 4 feet long

and in the 50-pound range, formed a silvery whirlpool around us.

Located just off Plaza Islands, *Gordon Rocks* consist of three pinnacles, one of them submerged. Sheer walls drop to 200 feet, covered with yellow gorgonians. Below the 80-foot thermocline, the water was crystal clear, revealing diamond stingrays and a pair of Galapagos sharks.

A school of about a dozen eagle rays, swimming in formation was the highlight of our dive at *Whale Rock* near San

Travel Tips

Tours

The demand for dive boats in the Galapagos exceeds the supply, therefore it is difficult to charter something yourself. Package tours are available through agencies specializing in dive travel. Costs will depend on the boat chartered, with a one-week trip ranging from \$1,300 to \$1,900. Add about \$1,000 for airfare and \$200 for a couple of days in Quito. For a two-week trip, double the boat cost. Extensions are available to the Amazon headwaters or the Andes highlands at approximately \$100 per day.

Airlines

Ecuador's national airline, *Ecuatoriana*, flies nonstop to Quito from Los Angeles and Miami. American Airlines also has service to Quito. Off-season excursion fares (October through April, excluding Christmas) run as low as \$600. High season fares may run \$300 more.

The Galapagos straddle the equator, and are located 600 miles offshore. Ecuador's domestic airline, *TAME*, flies from Quito to the islands in about two and a half hours with a stop in the coastal city of Guayaquil. Most domestic fares within Ecuador are cheap, but this flight is a hefty \$350. Galapagos' airport is on the island of Baltra, from where you will be taken to your boat via bus.

Ecuador's national currency is the sucre, which ranged from 850 to 900 per dollar last summer. Prices for food, hotels, and gifts are extremely low by U.S. standards. Tour prices are high by comparison, but the services of Metropolitan Touring are worth it.

Documents

A passport is the only document required for entry into Ecuador or the Galapagos. Upon arrival in Baltra, every tourist is required to pay a national park fee of \$40 U.S. This amount is usually included in the tour cost, and goes toward the upkeep and supervision of the islands.

Departure tax from Quito back to the United States is \$25, payable at the airport.

Diving

Live-aboards range from small fishing vessels to luxurious sailing boats. We were well satisfied with both the *Encantada* and the *Beagle III*. The pangarderos—crew members who run the small landing craft—especially impressed us with their seamanship. Knowledge of Spanish helps in conversing with boat crews, as sometimes only the guide speaks English.

Minimum duration for a diving trip is one week, which would allow visiting either the southern or the central islands. Both groups can be covered in two weeks, with an extension of four days required to dive the northern islands, Darwin and Wolf. These are supposed to be best for shark activity, although Roca Redonda provided all the action anyone could ask for.

Electric current and plugs on the boats and throughout South America are the same as in the U.S.: 120 volts, 60 cycles, so your electronic toys will feel right at home.

The nearest available recompression chamber is at the U.S. Navy base in Panama. A diving accident in one of the northern islands would require up to three days sailing time to the airport at Baltra, unless emergency evacuation by helicopter can be arranged. This is possible, but to count on it would be foolish. Most

days there are only two dives, to allow for time on land. Therefore, problems with dive tables are unlikely if normal conservative procedures are followed. As is the case in any remote location, each diver is responsible for his own safety and well-being.

Climate and Seasons

Even though the islands are on the equator, the water is relatively cool for this latitude—especially May through November, owing to the influence of the Humboldt Current. This period is called the *Garua* season, and skies are usually overcast, with occasional drizzle. However, warm, sunny days with temperatures in the 80s are not unusual during these months. Surface water temperatures are in the high 60s, and as much as 10 degrees colder below the deep thermoclines. Only the remote northern islands, Wolf and Darwin, are warmer. A quarter-inch farmer john wet suit is recommended.

December through April is the rainy season, but these are desert islands and rain is infrequent. Between storms, the weather is hot and sunny. Air temperatures are balmy and tropical, with 100 degrees not unusual. The water also warms up into the mid 70s during this time, owing to the influence of the Panama Current. A $\frac{3}{16}$ -inch suit suffices for most divers.

Travel Information

Among the travel agencies booking trips to the Galapagos are:

Can-Am Tours & Travel, 1560 Superior Ave., Suite A2, Costa Mesa, CA 92627-3653; Phone (714) 645-7171

Sea Safaris, 3770 Highland Ave., Suite 102, Manhattan Beach, CA 90266; Phone (800) 821-6670; in California (800) 262-6670.

A Galapagos shark cruises through a school of barracuda. A male frigate bird puffs up its pouch in a mating display.

Cristobal Island. Later in the dive, I spotted another one, so big that at first I thought it was a manta ray. Amberjacks and snappers also cruised the water column, accentuating the abundant fish life in these islands. Whenever the cook on our boat wanted fresh fish for dinner, he merely went out in a panga with a line (no pole) and some bait, and within a half hour invariably returned with several big fish.

Blue-footed boobies have turned San Cristobal's Punta Pitt into a huge nesting colony. They make their home on the ground, often in the middle of the trail, forcing hikers to detour around them. We observed their unique mating dance, the male strutting with head held high, showing off his outrageous blue feet in an attempt to attract the attention of a female. Most of the nests contained only one chick, apparently owing to the island's limited food supply. The older chicks were covered with a white down that looked like fine fur; the younger ones were naked.

Also present were the magnificent frigate birds. These pirates of the sky harass other birds on the wing, stealing food by forcing them to drop fish that they have captured. The male has a bright red chest pouch, which he inflates and makes a drumming noise to

attract the attention of females.

Champion Rock, off Floreana Island, was a mecca for green turtles. We found one after another resting in crevices, and shot sequence pictures as they took off and began swimming. Schools of pompano surrounded some of the swimming turtles, and occasionally would brush against the shell, as if scratching their backs. Although five in our group were marine biologists, no one could adequately explain the reason for this behavior.

The terraced wall is covered with yellow gorgonians; a few crevices housed diamond stingrays. All the while playful sea lions kept trying to get our attention. Scythemark butterfly fishes, rare in other parts of the northern Pacific, are plentiful here.

Floreana Island is noted for Post Office

Bay. Two hundred years ago, whalers set up a barrel here, where they left letters in the hope that homeward bound sailors would take them along. The system is still in use, although the postcards I left haven't arrived yet. With so many turtles in the waters off the island, it is no surprise that the beach at Floreana is a favorite nesting spot. It looks like the site of a battle, but what seem to be bomb craters are the pits dug by females to lay their eggs.

Inland, a saltwater lagoon is a gathering place for flamingos. The woods around it are covered with stark gray trees that look dead. The locals call them holy sticks, because they grow leaves only during the rainy season, which begins around Christmas.

Another outstanding dive site near Floreana is *Devil's Crown*, which is sup-



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posed to be "shark infested." We saw only a few off in the distance. But our northernmost site, *Roca Redonda*, more than made up for it. Open to the full power of the swells from the north, the current and heavy surge around this large tabletop rock tosses everything to and fro, from angelfishes to vast schools of barracuda to divers. The only swimmers that were strong enough to ignore the surge were the sharks, which were both large and plentiful. Fat, full-bodied hammerheads, whitetips, blacktips, and Galapagos sharks, six to eight feet long, constantly cruised through the area at a depth of around 20 feet. Most ignored us, maintaining a personal space of about 25 feet in the 40-foot visibility. Only the Galapagos sharks made a couple of tentative, curious passes, but even they displayed no aggressive behavior. Judging from the way they cruised through the most turbulent white water without even a pause, the sharks probably considered helpless divers beneath their interest, as it was all we could do to keep from being bashed against the rocks. Besides, the abundance of fishes probably keeps them satiated.

Punta Vicente Roca, near the northern end of Isabella Island, is an excellent anchorage and therefore a popular night diving spot. Slipper lobsters, crabs, and the rare redlip batfish are some of the nocturnal creatures observed here. Turtles sleep in crevices, as do parrotfish and other daytime creatures.

The sheer cliffs of volcanic rock continue underwater as spectacular drop-offs. Below the 80-foot thermocline, visibility opened to over 150 feet, the best of the trip. Gigantic rocky monoliths, covered with gorgonians and sponges, rise from the sand bottom. Fish life at this depth is less plentiful than that observed in shallow water, but a few scorpionfish and groupers were present, as well as a horse conch with a brilliant red mantle.

Isabella is the largest of the Galapagos Islands, containing nearly 60 percent of the total land mass. Its northernmost tip is Punta Albarmar, housing the remains of a World War II U.S. radar base. Today, the rocks around the crumbling foundations are populated by marine iguanas. These prehistoric-looking reptiles are usually found in densely packed communities. They feed on algae, and once were regularly observed eating underwater. The warm waters of the 1982-83 *El Niño* decimated their numbers to the extent that they now eat their fill in the intertidal zone.

At *Agua Cove* on Isabella, we climbed a cliff through a forest of holy sticks, overlooking a water-filled crater, part of an ancient caldera. From the top we could see Darwin Volcano and its vast lava field. Several islands were the site

of recent eruptions, where spatter cones and lava tubes are spread across the landscape. Often the volcanoes eject "lava bombs," or volcanic boulders. Because they are filled with more holes than a Swiss cheese, people can lift rocks that look as though they weigh half a ton.

On the last of our 14 days of diving, *Albany Island* provided a great send-off. Hardly more than a large rock off Santiago Island, a rocky shelf drops off from 35 feet into sand at 120 feet. As I descended to photograph a vast colony of garden eels, my buddy yelled and pointed upward. Flying overhead was a squadron of about three dozen spotted eagle rays. I sprinted ahead to get underneath them, using up about a third of my air in the process. I actually joined the school with eagle rays beside and below me as well. Meanwhile, hammerheads and Galapagos sharks were cruising overhead. At times like this, you realize you are only a fortunate visitor in their ocean.

One of the greatest thrills for an experienced diver is sharing the water with something larger than himself, and the Galapagos offered innumerable opportunities to do that. For challenging, unusual diving, as well as a living museum of terrestrial life, this remote archipelago has earned its reputation as a world-class adventure travel spot. **\$**

SAFE

(Continued from page 46)

tor whether diving from shore or a boat.

☐ Safety stops should be made at 15 feet for three minutes in any dive.

☐ Divers visiting for one day only should make only shallow dives.

Besides setting these safety standards, CADO intends to increase and standardize the skill levels of its boat captains and dive masters through a series of special training classes. "The CADO seal at a dive shop should become a visiting diver's guarantee of safety and professionalism in Cozumel," says CADO spokesman Tom Hartdegen.

Despite all the safety precautions, if a diver incurs decompression sickness (the bends) or arterial air embolism, his costs for treatment in the island's hyperbaric chamber are covered through a special \$1 fee that is added to the normal cost of a day of diving. Normally, treatment runs into the thousands of dollars. If a diver does carry private insurance, his company will be billed. But if the insurance company refuses to pay, the chamber absorbs all the costs, all for

just \$1 a day. Twenty-five dive shops participate in the chamber program, which has been operating since May, 1987.

According to Dr. Mario Abarca, who has been affiliated with Cozumel's chamber since it's opening, Cozumel's response time to an accident is among the fastest anywhere. "The average response time is about 17 minutes," he says. "Divers are brought from the reefs to San Francisco Beach, which takes only about 10 minutes. Since the dive boat radios ahead, our ambulance is waiting. It takes just another seven minutes to reach the chamber downtown.

Dr. Abarca is proud of Cozumel's quick response time. But he jokes, "Unfortunately, we can never be the world's fastest because we did not build our chamber over the reef."

My assessment after two recent visits: if you dive with a CADO/ chamber member and dive within your own limits (this means not letting someone talk you into a dive you don't feel qualified to make, you should expect to have a very enjoyable vacation. Drift diving through Cozumel is a lot of fun. **\$**

Trivia Quiz ANSWERS

1. True.
2. Habitat
3. b. Biotope
4. True
5. 1 = d; 2 = c; 3 = e; 4 = a; 5 = b
6. True
7. 2, 4, 5 & 6
8. Corals
9. Littoral
10. Portuguese man of war
11. (1) Florida (6) Gulf States
(2) California (5) New England
(4) Great Lakes (3) Mid-Atlantic States
12. 1 = e; 2 = c; 3 = b; 4 = a; 5 = d
13. True
14. Visibility
15. True
16. Replace (or return)
17. False
18. True
19. Will not
20. True

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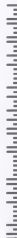
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Sat. & Sun.: 9 to 6

Dive West

115 W. Main St.
Santa Maria 93454
(805) 925-5878

Monday-Saturday: 10 to 6

Sunday: 12 to 6

Divers Corner

12045 Paramount Blvd.
Dorsey 90242
(213) 669-7702

Mon., Wed., Fri., Sat.: 9 to 6

Tues., Thurs.: 9 to 9

Sunday: 12 to 5

Divers Supply of

Santa Barbara County
5822 Hollister Ave.
Goleta 93117
(805) 964-0180

Monday-Friday: 10 to 6

Saturday: 10 to 5:30

Divers West

2333 E. Foothill Blvd.
Pasadena 91107
(619) 796-4287
Tuesday-Friday: 10 to 7
Saturday: 9 to 6

The Diving Locker

1020 Grand Ave.
San Diego 92109
(619) 272-1120

Monday-Friday: 9 to 7

Sat. & Sun.: 8 to 5

The Diving Locker

405 N. Hwy. 101
Solana Beach 92075
(619) 755-6822

Monday: 10 to 6

Tuesday-Friday: 9 to 6

Sat. & Sun.: 8 to 5

Far West Marine Center

2941 Willow Lane
Thousand Oaks 91361
(805) 495-3600

Monday-Friday: 9 to 6

Saturday: 9 to 5

Far West Marine Center

1733 Los Angeles Ave.
Simi Valley 93065
(805) 522-3483 (DIVE)
Daily: 10 to 6

Gold Coast Scuba

955 E. Thompson Blvd.
Ventura 93001
(805) 652-0321

Daily: 10 to 6

Howell's Dive Shop

1426 Eureka Way
Redding 96001
(916) 241-1571

Monday-Saturday: 8 to 6

Innerspace Divers

1305 N. Chester
Bakersfield 93308
(805) 399-1425

Monday-Friday: 10 to 6

Saturday: 10 to 3

La Jolla Divers Supply

7522 La Jolla Blvd.
La Jolla 92037
(619) 459-2691

Monday-Friday: 9 to 6

Saturday: 8 to 5

Malibu Divers

21231 Pacific Coast Hwy.
Malibu 90265
(213) 456-2396

Monday-Friday: 10 to 6

Sat. & Sun.: 8 to 6

Marina Del Rey Divers

2539 Lincoln Blvd.
Marina Del Rey 90291
(213) 827-1131 CA only

1-800-227-9042 Others

Friday, Saturday: 10 to 7:30

Sunday: 10 to 4:00

Motherlode Skin Diving

2020 "H" St.
Sacramento 95814
(916) 446-4041

Monday-Friday: 9 to 6

Saturday: 10 to 4

NAPA Gun & Dive Exchange

950 Randolph St.
Napa 94559
(707) 255-3900

Monday-Saturday: 9 to 6

Olympic Scuba Schools

2959 N. Main St.
Walnut Creek 94596
(415) 933-6050

Monday-Friday: 10 to 9

Saturday & Sunday: 10 to 6

Openwater Habitat

411 South Main St.
Orange 92668
(714) 744-8355

Monday-Friday: 11 to 8

Saturday: 10 to 5

Sunday: 12 to 4

Outrigger Dive Shop

2110 Winchester Blvd.
Campbell 95008
(408) 374-8411

Monday-Friday: 10 to 7

Saturday: 9 to 5:30

Pacific Coast Divers

3809 Plaza Drive, Suite 108
Oceanside 92056
(619) 728-7060
Daily: 10 to 7

Pacific Sporting Goods

11 39th Pl.
Long Beach 90803
(213) 434-1604

Monday-Thursday: 10 to 6:30

Friday: 10 to 7, Sat.: 9 to 6

Sunday: 9 to 5

Pacific Wilderness & Ocean Sports

1719 S. Pacific Ave.
San Pedro 90731
(213) 833-2422

Monday-Thursday: 10 to 6:30

Friday: 10 to 7, Sat.: 10 to 6

Sunday: 9 to 5

The Pinnacles Dive Center

875 Grand Ave.
Novato 94947
(415) 897-9962

Monday-Friday: 10 to 7

Sat. & Sun.: 8 to 4

The Pinnacles Dive Center

112 Army Dr.
Santa Rosa 95401
(707) 542-3100

Monday-Friday: 10 to 7

Sat. & Sun.: 8 to 4

Reef Seekers Dive Company

8642 Wilshire Blvd.
Beverly Hills 90021
(213) 652-4990

Monday-Friday: 10 to 7

Saturday: 10 to 5

Rick's Diving Locker

945 W. Valley Parkway, Suite #L
Escondido 92025
(619) 746-9980

Monday-Friday: 10 to 7

Saturday: 10 to 7

Sunday: 8 to 4

San Diego Divers Supply

4004 Sports Arena Blvd.
San Diego 92110
(619) 224-3439

Monday-Thursday: 9 to 7

Friday: 9 to 6

Sat. & Sun.: 8 to 6

Scuba Adventures

1039 Grand Ave.
Arroyo Grande 93420
(805) 773-3463 or (805) 473-1111

Daily: 8 to 8

Scuba Cal USA

15 Tennessee St.
Vallejo 94590
(707) 642-9320

Monday-Friday: 10 to 6

Saturday: 10 to 4

Scuba Duba Dive Shop

7126 Reseda Blvd.
Reseda 91335
(818) 881-4545

Monday-Saturday: 10 to 7

Scuba Haus

2501 Wilshire Blvd.
Santa Monica 90403
(213) 628-2916

Monday-Thursday: 10 to 6

Friday: 10 to 7

Sat. & Sun.: 10 to 12 to 5

Scuba Toys

9547 Valley View Ave.
Cypress 90630
(714) 527-0430

Monday-Thursday: 10 to 7

Friday: 10 to 7

Sat. & Sun.: 10 to 7, Sun.: 10 to 6

Scuba Ventures

2222 E. Cliff Dr.
Santa Cruz 95062
(408) 476-5201

Monday-Thursday: 9 to 5

Saturday & Sunday: 8 to 6

Friday: 9 to 6

Sea to Sea

965 S. Mt. Vernon Ave., Suite D
Colton 92324
(714) 825-2502

Monday-Friday: 10 to 7

Saturday: 9 to 5

Closed Sunday

Ski and Sports

1802 E. Katella Ave.
Orange 92667
(714) 833-1880

Monday-Friday: 10 to 9

Saturday: 10 to 6

Sunday: 10 to 5

Southern Calif. Diving Center

1121 S. Glendora Ave.
West Covina 91790
(619) 338-8863

Monday-Saturday: 9 to 7

Sports Cove

1410 E. Monte Vista
Vacaville 95688
(707) 448-9454

Monday-Friday: 10 to 8

Sat. & Sun.: 12 to 5

Stan's Skindiving

554 S. Bascom St.
San Jose 95128
(408) 294-7717

Monday-Thursday: 10 to 6:30

Friday: 10 to 8

Saturday: 9 to 5

Tri Valley Scuba School, Inc.

21310 San Ramon Valley Rd.
San Ramon 94583
(415) 828-5040

Monday-Friday: 11 to 6

Saturday: 10 to 4

Utah Skin & Scuba

1900 "A" No. State St.
Utah 95482
(707) 462-5396

Monday-Saturday: 9 to 5:30

Closed Sunday

Valley Aquatics

1209 McHenry Ave. #C
Modesto 95350
(209) 527-2822

Monday-Thursday: 10 to 6

Closed Sunday

COLORADO

Beaver Divers

P.O. Box 3743
Vail 81658
(800) 748-2969

(303) 949-9120

Blue Mesa Scuba & Travel Center

34 South Selig Ave.
Montrose 81401
Dive Shop Phone: (303) 249-8679

Video Shop Phone: (303) 249-8669

Travel Center Phone: (303) 249-8666

Monday-Friday: 11 to 8:30

Saturday: 10 to 9:30

Sunday: 12 to 8:30

Colorado Diver Training Center

2090 East 104th Ave. Suite 101
Denver 80233
(303) 45-SCUBA (303-457-2822)

Hours: 11 to 9

Diver's Reef

3014 N. Nevada
Colorado Springs 80907
(303) 634-3366

Monday-Saturday: 10 to 6

Leisure Diving

60 S. Havana St. #617
Aurora 80012
(303) 344-0414

Monday-Friday: 10 to 7

Saturday: 10 to 5

CONNECTICUT

Niantic Water Sports

283 Main St.
Niantic 06357
(203) 739-8596

Summer: Monday-Saturday: 10 to 7

Sunday: 10 to 3

Fall: Tuesday-Friday: 12 to 6

Saturday: 10 to 8

DISTRICT OF COLUMBIA

National Diving Center

4932 Wisconsin Ave. N.W.
Washington D.C. 20016
(202) 363-6123

Monday-Friday: 9 to 7

Saturday: 9 to 5

FLORIDA

ABC Sports Inc.
1915 Linhart
Fl. Myers 33901
(813) 334-4616
Monday-Friday: 10 to 5:30
Saturday: 10 to 3
Adventure Scuba
150 N. U.S. Hwy. 1
Tequesta 33458
(305) 748-1555
Monday-Friday: 10 to 6
Saturday: 8 to 6
Sunday: 8 to 3
**American Scuba
and Water Sports**
7115 U.S. Hwy. 19
New Port Richey 34652
(813) 848-5085
Daily: 9 to 6
Aquanauts South
903 S.W. 87th Ave.
Miami 33174
(305) 262-9295
Monday-Saturday: 9 to 7
AquaShop
505 Northlake Blvd.
North Palm Beach 33408
(305) 848-9042
Monday-Friday: 9:30 to 6:30
Saturday: 7 to 6
Sunday: 7 to 4
Aquatic Center
3548 S.W. Archer Rd.
Gainesville 32608
(904) 377-DIVE
Monday-Friday: 10 to 7
Saturday: 10 to 5
Closed Sunday
Blue Horizons
3800 Tampa Rd. #120
Oldimar 34677
(813) 854-2296
Monday-Friday: 9 to 8
Saturday: 8 to 8
Sunday: 8 to 2
Buddy's Dive Shop
Mile Marker 85 US 1, P.O. Box 409
Islamorada 33036
1-800-367-4707 In Florida
904-223-4707 Others
Daily: 8 to 6
**Captain J's Dive
& Charter Service**
3-1 Hwy. 98
Destin 32541
(904) 654-5300
FAX: (904) 654-5375
Daily: 6 to 8
Dive and Tour, Inc.
1403 E. New York Ave.
Deland 32724
(904) 736-0571
Monday-Saturday: 10 to 6
Divers By The Bay
2550 So. Bay Shore Dr.
Coconut Grove 33133
(305) 854-1625
Monday-Saturday: 11 to 10
Diver's Dream
DBA Aquanauts South
903 S. W. 87th Ave.
Miami 33174
(305) 262-9295
Monday-Saturday: 9 to 7
Dive Shop II
Sea Mist Marina
700 Cassa Loma Hwy.
Boynton Beach 33435
(305) 734-5566
Monday-Friday: 9 to 7
Saturday & Sunday: 8 to 5
The Diving Locker
223 Sunny Isle Blvd.
North Miami Beach 33160
(305) 847-6025
Monday-Saturday: 9 to 9:30
Sunday: 9 to 6
Goldfishers Dive Shop
775 8th Court Bay #1
Vero Beach 32962
(407) 770-0204
Monday-Thursday: 9 to 5
Friday & Saturday: 10 to 9
Closed Sunday

Good Time Divers and Sports
2701 S.W. Collage Rd., Suite 107
Ocala 32674
(904) 237-DIVE (3483)
Daily: 9 to 6
Gulf Coast Pro Dive
7203 Highway 98 West
Pensacola 32506
(904) 456-8845
Monday-Thursday: 9 to 7
Friday & Saturday: 6 to 7
Sunday: 7 to 12
Hall's Dive Shop
1994 Overseas Hwy.
Marathon 33050
(305) 743-8929
Daily: 9 to 6
Key West Pro Dive Shop, Inc.
1605 N. Roosevelt Blvd.
Key West 33040
(305) 296-3823
Ocean Pro Dive Shop Inc.
2259 Bee Ridge Rd.
Sarasota 33579
(813) 924-3483
Monday-Thursday: 10 to 6
Friday: 10 to 9
Saturday: 9 to 6
Panama City Dive Center
4823 Thomas Dr.
Panama City 32408
(904) 235-3390
Daily: 9 to 6
Scuba Haven
1420 E. Fowler Ave.
Tampa 33612
(813) 972-4455
Monday-Friday: 10 to 7
Saturday: 10 to 6
Closed on Sunday
January thru March
Scuba Shop
348 Miracle Strip Parkway #19
Fort Walton Beach 32548
(904) 243-1600 and 243-3373
Sunday-Friday: 9 to 5
Saturday: 8 to 6
Scuba Services, Inc.
5008 34th St. S. (U.S. 19 S.)
St. Petersburg 33711
(813) 822-DIVE or (800) 74-SCUBA
Daily: 9 to 7
Diver Charters 7 Days a Week
Scuba-Ski, Inc.
118 9th St. S. South
Naples 33940
(813) 262-7389
Treasure Island Divers
111 108th Ave.
Treasure Island 33078
(813) 360-6669
Monday-Saturday: 10 to 6
Vortex Springs
Route 2, Box 18A
Ponce de Leon 32465
(904) 835-4979
Monday-Thursday: 7:30 to 5
Friday-Sunday: 7 to 7
GEORGIA
Atlanta Scuba Center
1925 Piedmont Circle
Atlanta 30324
(404) 872-5448
Monday-Friday: 10 to 7:30
Saturday: 10 to 8
Charbon's Specialty Sports
850 Hawthorne Ave.
Athens 30606
(404) 548-7225
Saturday & Wednesday: 9:30 to 6
Thursday & Friday: 9:30 to 8
Dive, Dive... Dive...
Winnett Mall Corners Shopping Ctr.
2131 Pleasant Hill Rd.
Duluth 30136
(404) 476-7833
Monday-Saturday: 10 to 7
Closed Sunday
Diving Locker/Ski Chalet
74 W. Montgomery Cross Rd.
Savannah 31406
(912) 927-6603 or 6604
Monday-Friday: 10 to 6
Saturday: 10 to 5

Garrard Dive Educators, Ltd.
2555 Delk Rd.
Marietta 30067
(404) 984-0382
Monday-Saturday: 10 to 9
Golden Isles Dive and Ski
5701 Altama Ave.
Smyrna 31520
(912) 638-6627
Monday-Friday: 10 to 8
Saturday: 10 to 5
Island Dive Center
1610 1/2 Frederica Rd.
St. Simons Island 31522
(912) 638-6590
Monday-Saturday: 10 to 6
Planet Ocean Scuba Center
Windsor Village Shopping Center
Columbus 31909
(404) 563-9675
Monday-Friday: 10 to 6:30
Saturday: 10 to 5
Seasports, Inc.
11240 Alaphetta Hwy. #200
Roswell 30076
(404) 564-9176
Monday-Wednesday & Friday: 11 to 7
Thursday: 11 to 8
Saturday: 10 to 6
The Dive Shop
2401 B-1 Dawson Rd.
Albany 31707
(912) 436-3033
Monday-Saturday: 8 to 6
Closed Sunday
HAWAII
Central Pacific Divers
C/O Century Investments
181 Lahainauna Rd., Suite 1
Lahaina, Maui 96761
(808) 661-4661
Daily: 7 to 9
Jack's Diving Locker
P.O. Box 5306
Coconut Grove Marketplace
Kailua-Kona 96745
(808) 329-7585
(800) 345-4807
Daily: 9 to 9
Kohala Divers, Ltd.
P.O. Box 4935
Kawaihae 96743
(808) 882-7774
Daily: 8 to 5
Kona Coast Skin Diver Ltd.
75-5614 Palani Rd.
Kailua Kona 96740
(808) 329-8802
Daily including holidays: 7 to 6
Lahaina Divers
162 Lahainauna Rd.
Lahaina, Maui 96761
(808) 661-4655
Daily: 8 to 9:30
Maui Dive Shop
Azelea Place Shopping Center
Kihei 96753
(808) 879-3388
Daily: 8 to 9
Ocean Activities Center
3750 Wailea Alanui D2
Wailea, Maui 96753
(808) 878-4485
Daily: 9 to 6
Ocean Adventures
98-406 Kam Hwy.
Pearl City, Oahu 96782
(808) 457-9060
Monday-Thursday: 8 to 6
Friday: 8 to 7
Saturday & Sunday: 7 to 7
Closed Wednesday
Rainbow Divers
1640 Wilkina Dr.
Wahiawa, Oahu 96788
(808) 822-4532
Monday-Friday: 9 to 6
Sat. & Sun.: 8 to 6
IDAHO
Dive Magic
236 Main Ave. N.
Twin Falls 83301
(208) 733-1979
Monday-Friday: 9 to 5

The Scuba Diving Co.
3707 Overland Road
Boise 83705
(208) 343-4470
Daily: 9:30 to 8:30
ILLINOIS
Adventures In Scuba, Inc.
1730 W. Fullerton
Chicago 60614
(312) 935-DIVE (3483)
Monday-Friday: 11 to 9
Saturday: 9 to 5
Do Dive In
9011 N. University
Peoria 61615
(309) 692-7600
Monday, Wednesday, Friday: 5:30 to 9
Tuesday, Thursday: 10 to 1
Saturday: 9 to 5
**Forest City Scuba
& Sport Center, Inc.**
1834 Daimler Rd.
Rockford 61112
(815) 398-7119
Monday/Thursday: 10 to 8
Friday: 9 to 5
Saturday: 9 to 5
**Scuba Diving Schools of
America, Inc.**
4 S. 100 Route 59, Unit 19
Naperville 60563
(708) 383-7060
Monday-Friday: 10 to 8
Tuesday & Thursday: 10 to 9
Saturday: 10 to 4
The Scuba Shop Inc.
436 Roosevelt Rd.
Glen Ellyn 60137
(312) 858-4485
INDIANA
Divers Supply Company, Inc.
1079 Broadridge Ave.
Indianapolis 46220
(317) 253-2000
Mon., Wed. & Fri.: 9 to 7:30
Thurs. & Thurs.: 9 to 5:30
Saturday: 9 to 5
Divers World
1271 E. Morgan Ave.
Evansville 47711
(812) 423-2738
Monday-Friday: 10 to 6
Saturday: 8 to 5
DNP Diving, Inc.
604 E. Main
Logansport 46947
(219) 735-3483
Monday-Friday: 8 to 4
Pro Dive Shop
3203 Covington Rd.
Fl. Wayne 46804
(219) 432-7745
Mon., Tues., Thurs. & Fri.: 12 to 6
Saturday: 9 to 1
IOWA
**Iowa State Skin Diving
Schools, Inc.**
West University Plaza
7500 W. University Ave., Suite C
Des Moines 50311
(515) 255-8999
Monday-Friday: 10 to 7
Saturday: 10 to 6
KANSAS
The Dive Shop
7300 W. Frontage Rd.
Merriam 66204
(913) 677-3483
Daily: 10 to 7
KENTUCKY
Laurel Diving Headquarters
414 Master St.
Corbin 40701
(606) 523-3600
Hours: 9 to 6
Lexington Dive
2680 Wildlife Drive
Lexington 40503
(606) 277-5799
Monday-Friday: 10 to 7
Saturday: 10 to 5

Louisville Dive Shop
2476 Bardstown Rd.
Louisville 40205
(502) 458-8427
Monday-Friday: 11 to 7
Saturday: 11 to 5

Undersea Adventures
Hwy. 80
Hurricane 41749
(606) 279-3172
Monday-Saturday: 9 to 6

LOUISIANA

Divers Destination of Louisiana
201 Gilbeau Rd.
Lafayette 70503
(504) 384-4578

Houma Watersports
3219 W. Main
Houma 70360
(504) 879-2900
Monday-Friday: 10 to 6
Saturday: 10 to 3

Sea Horse Diving Academy

8726 Chef Menteur Highway
New Orleans 70127
(504) 248-6523
Monday-Friday: 11 to 7
Saturday: 10 to 8

Seven Seas
7855 Jefferson Highway
Baton Rouge 70809
(504) 928-1819
Monday-Saturday: 9:30 to 5:30

The Water Habitat, Inc.
1602 Jackson St.
Alexandria 71301-0442
(318) 443-5075
Mon., Wed., & Fri.: 10 to 8
Saturday: 10 to 5

MAINE

Aqua Diving Academy
1153 Congress St.
Portland 04102
(207) 772-4200
Monday-Friday: 10 to 6
Saturday: 10 to 5

Skin Diver's Paradise
784 Turner Rd.
Auburn 04210
In Maine: (800) 427-DIVE
(207) 782-7339
Monday-Friday: 10 to 8
Saturday: 8 to 8

MARYLAND

Bethany Water Sports
3275 Bethany Ln.
Ellicott City 21043
(301) 461-DIVE
Monday-Friday: 12 to 7
Saturday: 11 to 5

Divers Den Inc.
8105 Harford Rd.
Baltimore 21234-5776
(301) 668-6866
Mon., Tues., Thurs. & Fri.: 9:30 to 9
Wed. & Sat.: 9:30 to 5

The Scuba Hut, Inc.
139 Delaware Ave.
Glen Burnie 21061
(301) 761-4520
Mon., Wed. & Fri.: 10 to 8
Tuesday & Saturday: 10 to 6

Tidewater Aquatics
1515 Forest Dr.
Annapolis
(301) 266-1992 or (800) 637-2090
Monday-Friday: 12 to 7
Saturday: 10 to 5

Tidewater Aquatics
227-B E. Main St.
Salisbury
(301) 742-1992 or (800) 637-2120
Monday-Friday: 11 to 6
Saturday: 10 to 5

MASSACHUSETTS

Aquarius Diving Center Inc.
3239 Cranberry Hwy.
Buzzards Bay 02532
(508) 759-DIVE
Monday-Friday: 10 to 7
Saturday: 8 to 4

International Divers Supply
49B Winn St.
Burlington 01803
(617) 272-5184
Summer: Monday-Friday: 10 to 8
Saturday: 9 to 5
Sunday: 8 to 4

**Wintar: Monday-Friday: 10 to 6
Saturday: 9 to 5
Closed Wednesday & Sunday**

Merrimack Aquatic Center
171 Merrimack St. Route 110
Methuen 01844
(508) 689-8566
Monday-Friday: 11 to 7
Saturday: 12 to 4

Pro Divers USA, Inc.
236 Woods Rd.
Braintree 02164
(617) 848-4990
Open seven days

Ultramarine Divers
101 Commonwealth Ave.
Concord 01742
(508) 369-1154
Daily: 10 to 6

Whaling City Diving Center
448 Popes Island Road, Rt. 6
New Bedford 02740
(508) 992-2662
Monday-Friday: 10 to 8
Saturday: 9 to 6

Summer: Sunday: 9 to 4

MISSISSIPPI

Divers Incorporated
3380 Washburn Ave.
Ann Arbor 48104
(313) 971-7771
Monday-Friday: 10 to 8
Saturday: 10 to 5
Closed Tuesday & Sunday

The Dive Shop
G 4020 Corunna Rd.
Flint 48532
(313) 732-3900
Monday-Saturday: 9 to 6
Late Appointments Available

The Dive Site
9125 Portage Rd., Suite A
Kalamazoo 49002
(616) 323-3700
Monday-Friday: 10 to 7
Saturday: 10 to 5

Recreational Diving Systems
4424 N. Woodward
Royal Oak 48072
(313) 549-0303
Monday-Friday: 10 to 7
Saturday: 10 to 5

Scuba North, Inc.
13380 W. Bayshore Dr.
Traverse City 49684
(616) 947-2520
Monday-Thursday: 9 to 8
Friday-Saturday: 9 to 7
Sunday: 10 to 5

(Winter) Mon.-Sat.: 10 to 6

The Scuba Shack
9982 W. Higgins Lake Dr.
Higgins Lake 49627
(517) 821-6477
(Summer) Monday-Friday: 9 to 5
Saturday & Sunday: 8 to 8

Seaquatics, Inc.
979 S. Saginaw Rd.
Midland 48640
(517) 835-6391
Monday-Friday: 10 to 6
Saturday: 10 to 5

Skam! Shop
5055 Plainfield N.E.
Grand Rapids 49505
(616) 364-8416
Monday, Wednesday, Friday: 10 to 9
Tuesday, Thursday, Saturday: 10 to 6

Tom & Jerry's Skin & Scuba Shop
20318 Ven Born Ave.
Dearborn Heights 48125
(313) 278-1124
Monday-Friday: 11 to 7
Saturday: 11 to 5

ZZ Under Water World, Inc.
1608 E. Michigan Ave.
Lansing 48912
(617) 485-3894
Monday-Friday: 10 to 7
Saturday: 10 to 5

MINNESOTA

Club Scuba East
3035 White Bear Ave.
Maplewood 55109
(612) 770-5555
Monday-Friday: 10 to 8
Saturday: 10 to 5
(Summer) Sunday: 9 to 1

Club Scuba West
300 E. Wyzata Blvd.
Wayzata 55391
(612) 473-4266
Monday-Friday: 10 to 8
Saturday: 10 to 5
(Summer) Sunday: 9 to 1

Fantasea Scuba
Located just 10 minutes
from the Minneapolis
International Airport
(612) 890-DIVE (612-890-3483)
Monday-Friday: 10 to 8
Saturday & Sunday: 10 to 6

MISSISSIPPI

Out and Under
1200 Roebuck Dr.
Meridian 39001
(601) 693-5827
Monday-Saturday: 10 to 6

MISSOURI

Academy of Scuba Training, Inc.
437 Broadway
Cape Girardeau 63701
(314) 335-0756
Monday-Friday: 9 to 6
Saturday: 9 to 5

Aquasports, Inc.
5601-A S. Campbell
Springfield 65807
(417) 883-5151
Monday-Friday: 9 to 7
Saturday: 9 to 5

Captain Nemo's Dive Shop
1414 V. Rangeline
Columbia 65201
(314) 442-3483
Monday-Friday: 10 to 6
Saturday: 10 to 5

Divers Village
PO Box 329, Lake Rd. West 20
Lake Ozark 65049
(314) 365-1222
Daily: 9 to 5

Table Rock State Park Marina
S.R. 1, Box 911
Brenson 65616
(417) 334-3069
Daily: sunrise to sunset
Now, through Feb. open by appt.

The Dive Shop North
2526 N.E. Vivon
Kansas City 64118
(816) 455-1942
Monday-Friday: 10 to 7
Saturday: 10 to 5

NEBRASKA

Big Mac Scuba & Sail
4711 Huntington St., Suite #1
Lincoln 68503
(402) 466-9404
Wednesday-Saturday: 10 to 5
Sunday: 11 to 5

NEBRASKA

DiveStar
2322 North 72nd St.
Omaha 68134
(402) 391-1155
Monday-Thursday: 12 to 7
Fri., Sat., Sun.: 12 to 5

Mid Coast Divers Supply
831 Maple Street
Omaha 68134
(402) 391-1559
Monday-Saturday: 10:30 to 6

NEVADA

Desert Divers Supply
5720 E. Charleston Blvd.
Las Vegas 89122
(702) 438-1000
Monday-Friday: 9 to 8
Saturday & Sunday: 8 to 6

Sierra Dive Co.
104 E. Grove St.
Reno 89502
(702) 825-2147
Mon., Tues., Thurs. & Fri.: 9 to 6
Wednesday: 9 to 9:30
Saturday: 10 to 5

NEW HAMPSHIRE

Atlantic Aqua Sports
522 Sagamore Rd.
Rye 03870
(603) 436-4443
Daily: 8 to 5, Closed Tues.

NEW JERSEY

Cedar Grove Divers Supply
192 Pompton Ave., Route 23
Cedar Grove 07009
(201) 857-1748
Tuesday-Friday: 12 to 9
Saturday: 10 to 5
Closed Sunday & Monday

Chatham Water Sports
9 North Passaic Ave.
Chatham 07928
(201) 835-5313
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Elitte Divers
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Rockaway 07866
(201) 585-2214
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Saturday: 10 to 5

Underwater Sports Inc.
Route 17 South
Rochelle Park 07662
(201) 843-3340
Monday: 10 to 7
Tues.-Fri.: 10 to 9
Sat.: 10 to 6

Whitehouse Aquatic Center
6 Hwy. 22 West
Whitehouse Station 08889
(201) 534-4090
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Sunday: 10 to 2

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Farmington 87401
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(505) 884-6776
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Saturday: 9 to 8
Sunday: 12 to 5

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Thursday: 10 to 7, Friday: 10 to 8
Saturday: 10 to 5

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Albany 12205
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Saturday: 10 to 9

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Sunday: 10 to 6

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Friday: 10 to 9
Saturday: 10 to 6

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Saturday: 9 to 6

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Saturday: 10 to 5

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Sandusky 44870
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Columbus 43229
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Sunday: 10 to 5
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Tues., Wed., & Fri.: 11 to 6
Saturday: 10 to 5

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Saturday & Sunday: 8 to 8
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Saturday: 9 to 6
Sunday: 9 to 11

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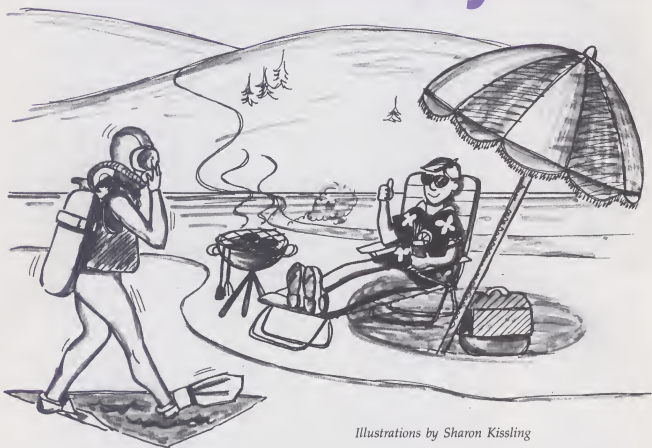
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Ice Diving, The Hard Way!

BY JAMES OLSEN



Illustrations by Sharon Kissling

*An inveterate ice diver explains how it's
really supposed to be done.*

Just for the sake of argument let's suppose anyone in his right mind, whether from Malibu or Minneapolis, really liked ice diving. The vast majority of sport divers rightly believe ice divers should suit, but they are amused at watching and reading about other people who do things they themselves consider crazy. So I guess we can make a case, however threadbare, for running an annual ice diving story every few years. But if it has to be done, let's do it right.

Since I've been ice diving for nearly 30 years, I have always been interested

in reading stories about the sport. After all this time, I'm still trying to figure out why other people do it. But most people who write about ice diving haven't really been ice diving.

Take the last two ice diving articles I read for example. One was about ice diving in New York and the other featured ice diving in California. That's right *California*.

With all due respect to the guy who wrote this story, there just isn't any ice diving in California. Just like there aren't any kelp beds in Kansas, or spiny lobster in Minnesota, or oceanfront homes in Oklahoma.

Now don't get me wrong, the author really believed he was ice diving in California. He even had pictures. And he

did stand out on the ice of some lake in the High Sierras as his "chainsaw whirled through the white crystalline surface, quickly opening a large aquatic triangle."

I can see it clearly. California divers in their convertibles, cruising up from Malibu high into the Sierras, where they finally discover a few inches of ice and attack it with a Homelite equipped with an 8-inch bar.

After this ordeal, they make a 15-minute dive in the frigid waters and spend the rest of the afternoon lounging in the Sierra sunshine sipping Coronas and sucking a chunk of fresh lime.

I'm reminded of Crocodile Dundee walking the streets of New York City. An ugly, desperate mugger jumps out of the

Jim Olsen is a free-lance writer who lives in Minnesota. This is his first contribution to SCUBAPRO Diving & Snorkeling.

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Those who step from the water after a genuine ice dive are often heard to comment that the pre-dive hole cutting and the dive itself are just a mild preamble to the real challenge of the ice diving experience—surviving the first few minutes back on solid ice.

Standing wet, on a 2,000-acre lake with the wind howling out of the north and whipping the subzero temperatures into three-digit wind chills, is somewhat different than an afternoon in the High Sierras.

The quick-release clip which attaches the safety line to the "D" Ring on your harness is layered with hard ice. You wait patiently while Wimpy rummages around in his trunk for a hammer. Three of your dive buddies, wielding small pickaxes, chip away at your BC. You pace back and forth, back and forth, to keep from becoming an ice sculpture. All the while, the water in your wet suit is quickly changing from a liquid to a solid.

The inevitable crowd of thrill-seeking spectators gathers closer. They hop off their snowmobiles or shuffle across the ice on their cross-country skis to watch the ice divers conduct one of America's remaining human tortures—the removal of a freezing wet suit.

A screwdriver with a long shank is inserted under the step-through portion of the diver's shortie, then rotated in a circular motion to free the leg. Using a heavy duty pliers, the zipper is edged downward. Assistant number one braces the ice diver's jaw with both hands, while assistants two and three pry the jacket away from the shoulders

and down the arms. Gloves have already been removed by the mitt crew.

Once the ice diver has been extracted from the shortie, the minor hair on his arms freeze instantly. This is standard procedure, and to be expected. Boots are removed by positioning the diver prone on the ice. Assistant number one stands astride the ice diver, legs spread, but being careful not to destroy the ice diver's brittle groin section or damage his sensitive facial area. Then assistants two and three can straddle the legs and remove the boots.

Up to this point, time has been a factor. But once the ice diver is barefooted, bareheaded and barefaced he is already in a state of suspended animation and unlikely to comment on removal efforts, or lack of them. However, if the subject owes you money, or has promised you money, you may wish to proceed quickly.

All that remains is removal of the farmer john. Place the diver back on the ice. Assistant number one must carefully insert his arms under the ice diver's arms, being especially careful to avoid the sharp, frosted underarm bars. Assistants two and three point the toes slightly and then slide the wet suit away from the frozen body.

Ignore the chalky texture of the ice diver's skin at this point, and persuade some of the spectators to assist in transporting the rigid form to a nearby vehicle.

Once thawed, the ice diver will soon recover his insanity and express a solid interest in making another ice dive as soon as possible.

S



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Inspired by the Sea

BY VERA CORRIVEAU

Two women enter the lobby of a New Orleans high rise as a large painting is being hung. They pause, their attention drawn to the profusion of nautilus spirals. One of the women, her hand hovering a fraction of an inch from the canvas over a large, partially revealed orb of gold leaf, exclaims, "Will you look at this!" Her companion takes several pictures of the painting. The brass title card tacked to the frame reads, "Underwater Fantasy by Luis Diaz."

Painter, sculptor, architect, karate black belt, big-game hunter, and diving enthusiast, Diaz was born in Costa Rica, a tiny tropical paradise flanked by the Caribbean Sea, the Pacific Ocean, and the Gulf of Panama. Diaz's home town, Golfito, is perched at the southernmost tip of the Costa Rican border.

"When I came to the United States to finish my education," recalls Diaz, "I learned for the first time what it felt like to be landlocked."

To cope with inland life and for inspiration for his art, Diaz makes frequent trips to Cozumel, Belize and other diving destinations. Although Diaz rarely photographs underwater, his diving excursions inspire marine-theme paintings and sometimes sculpture.

Diaz completes from 50 to 60 works of art each year, sometimes working for up to 72 hours without rest. This grueling pace is paired with unlikely intricacy of detail in his work.

Diaz's paintings reflect not only his fascination with the underwater world, but with two other themes: exotic flora and the Mayan heritage of Central American culture. Diaz paints enthusiastically, expansively, and extravagantly. Most Diaz paintings measure 30 by 40 inches, though many are much bigger. The largest to date is 18 feet tall, weighs over 500 pounds, and comprises more than 250 plates of platinum and gold leaf.

Another distinctive characteristic of Diaz's style is his liberal incorporation of precious and semiprecious stones, as well as gold, silver, and platinum leaf. For the observer, the search for raw jade, opals, turquoise, emeralds, or perhaps pearls, diamonds, or black coral in a Diaz work is seductive, inspiring ever-closer scrutiny. As one owner of a Diaz puts it, "You can feel his paintings—and they touch back!"

Diaz and his wife, Martha Ann, live in Raymond, Mississippi. The black iron gateway embracing the entrance to the long, dirt drive is a commanding, func-

tional example of his sculpture. His home, which he also designed, appears in an isolated clearing on the southern outskirts of town. "It is shaped like a cross," Diaz says, referring to the two-story structure with its weatherboard exterior. Inside, his loft studio, which is off-limits to visitors, butts an open gallery.

At the age of 40—considered young for a painter—Diaz has parlayed his adventurous mixed-media style into widespread regional popularity and is enjoying limited national recognition as well. For 15 years, Diaz's work has been featured frequently in one-man shows and other exhibitions.

In late 1989, Diaz's work was selected for representation by the Leon Loard Gallery of Fine Arts located in Montgomery, Alabama, and by the four Dolphin Galleries in Lahaina, Maui.

Further evidence of Diaz's widening popularity is his inclusion in the 1989 second edition of *American Artists: A Survey of Leading Contemporaries*. Editor Les Krantz, a nationally recognized art authority, describes the featured artists as important contributors to American Art. A 30-minute special featuring the volume and its artists has been scheduled for PBS telecast.

"It's not a specific scene or a specific creature that I paint," Diaz explains, nodding toward his painting of a stoplight parrotfish. "Who could hope to

The Art of Luis Diaz

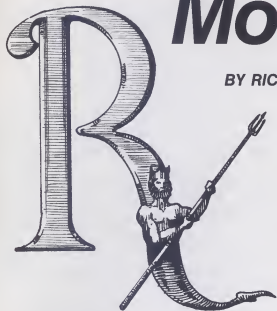


rival their splendor? No, it is the moods and emotions they evoke which become my art. And, those feelings... these feelings," he asserts, with a sweeping, open-palmed gesture toward the paintings which surround him, "begin right on the reefs. It would be wonderful to paint right then and there, when the mood strikes—to paint underwater. That is my fantasy!" **S**

Works by Luis Diaz include "Genesis," top, a steel sculpture; "Lord of His Domain," above, a lionfish with gold-leaf orb; and "Deep Purple," opposite, a watercolor with gold-leaf orb.

Verna Corrieau is a free-lance writer who divides her time between New Orleans and the Mississippi Gulf Coast. This is her first contribution to SCUBAPRO Diving & Snorkeling.

Call Me in the Morning



BY RICHARD E. EASTON, M.D.

Illustration by Nick Fain

If dive you must. . .

Medicine is full of secrets. It has mystical roots dating from ancient times when physicians had only magic and arcane potions at their disposal. (So, you say, "What's the difference today?" Sometimes maybe not much. However, the magic—the lung scan, exercise stress testing, arterial blood gas measurement, echocardiography—is better. Doctors today can diagnose lung disease and monitor its progress much more accurately.

The potions (bronchodilators, antibiotics and chromolyn sodium) are less obscure in terms of their rational use. But powerful drugs can exhibit potent side-effects. Physicians and patients who dive should not keep secrets about these drugs from each other. You and the physician who knows you best should study the rational uses and common side-effects of any medication you routinely use.

In spite of continuous study by doctors and patients, there are still secrets,

big ones, in medicine. Two I will share with you in this column are: doctors don't always know what is best for asthmatic divers, and divers with asthma may do things with which their doctors would not agree.

Doctors don't always know what to recommend to asthmatic divers because there is little research upon which to draw. Therefore, governments and physicians take the most conservative approaches.

The U.S. Navy will not accept an asthmatic into a diving program. The British Health and Safety Executive has banned people with asthma from working as commercial divers. Most physicians will permanently prohibit their asthmatic patients from diving because of the risk that sections of the lung, incompletely ventilated due to bronchospasm, will fail to empty sufficiently upon ascent resulting in pneumothorax and possible cerebral air embolism.

The easy way out of this challenging topic would be to recommend total abstinence from diving for persons with asthma (and other obstructive lung diseases). There are some major reasons I choose to take a different approach:

1. A great many people feel that "abstinence is its own punishment" and

they will not avoid diving under any circumstances.

2. The data from DAN (Diver's Alert Network) Surveys in 1986, 1987 and 1988 reveals that questions about asthma and diving were the most frequently asked (See Table 1).

3. A BMJ (British Medical Journal) article revealed divers who admitted to wheezing had made an average of 21 dives per year over a six-year period.

4. In June of 1988, DAN polled its 4,000 members and compared the data to its own 1987 diving accident survey. They found that 27 of 2,633 divers responding (1 percent) were "diving with asthma," but 11 of 270 (4 percent) of the accident population were "diving with asthma."

5. If people who have asthma are going to dive anyway, and if the rate of people who have accidents (4/100) while diving with asthma is four times greater than the comparative population (1/100), then those divers should have some rational guidelines with which they can temper their personal, subjective decision to dive in the face of what most feel is an absolute contraindication to diving (whether the statistics are strictly comparable or not).

Possibility VS. Probability.

Bronchospasm and cerebral air embolism complications are absolutely possible and pose real risks of serious proportions. Don't forget the term "possibility" is different than the term "probability."

Possibility asks: "Is it possible or impossible for this to happen?" The possibility that pneumothorax and cerebral gas embolism can happen is very real and should not be minimized by anyone, physician or diver.

Probability asks: "How often will a serious complication befall an asthmatic diver—0 percent or 10 percent or 50 percent or 100 percent of the time?" One way to answer that is to do laboratory research. Another is to observe the experience of asthmatic divers. The Brits did the latter.

The British Journal of Medicine (BMJ 1990, 300:166) published an article titled, "Diving Practices of Scuba Divers With Asthma," by Drs. P.J.S. Farrell and P. Glanville, two physicians in Devon, England. This is an interesting piece of work, because it acknowledges that it is possible for asthmatic divers to have problems, but shuns exotic research and, like the DAN data, attacks the pragmatic questions: "Do people with asthma dive, and when they dive what problems do they experience?" It thus has the potential of illuminating both

Richard Easton, M.D. is a graduate of the University of Kansas Medical School and the Harvard University School of Public Health. He is presently collaborating with his wife Fran, a Doctor of Psychology on a book tentatively titled, Diving Secrets: Essential Keys to Diving Fun and Safety.

questions; what should doctors say and what do divers do.

So what kind of research was this? Did the doctors use rats or guinea pigs? No! They used a questionnaire which they published in a dive magazine (circulation 38,000). The questionnaire was designed to examine the diving careers of the respondents and their history of asthma. It was not sophisticated and not statistically significant, but it was very informative. They asked the asthmatic divers what they really do, what kinds of problems they have and what kind of medications they use. "... the questionnaire (also) asked how soon respondents thought they could dive after an attack of asthma and whether they had..." actually done so.

Replies from 104 divers (91 men and 13 women) were received. They ranged in age from 16 to 40 years old and had been diving six years or less. The group had logged 12,864 total dives. Eighty-nine of the respondents had had asthma since childhood, 70 wheezed less than 12 times per year, but 22 wheezed daily. Conditions (in descending order of frequency) which precipitated an attack included upper respiratory tract infections, pollen allergies, exercise and cold air.

Fifty-four of the respondents had no idea how soon they could return to diving after wheezing (See Table 2).

Nine who wheezed daily thought that it was safe to dive one hour after wheezing. Those divers had logged 1,241 trouble-free dives. No cases of diagnosed pneumothorax or air embolism had occurred, but one diver had had decompression sickness on two occasions.

As a preventive measure, 96 respondents had taken bronchodilators (beta-agonists prescribed by their physicians) before diving. Twenty-nine were taking prophylactic (protective) medication regularly (17 inhaled steroids (cortisone) and 13 were using sodium cromoglycate (chromalyn sodium).

In the Real World

Scuba diving is regulated for the most part by educational and safety criteria. Divers are certified and dive operations adhere to accepted safety standards. There is, however, nothing to prohibit an asthmatic from hiding his or her medical history, becoming certified and ignoring the prohibition from a physician regarding diving. Therefore, some guidelines for asthmatic divers are in order.

To begin with, I am not recommending that persons with asthma should Scuba dive. That would be going against all of the accepted authorities. I am

simply acknowledging that the data reveals people with asthma do dive and there is an obligation to make this inherently risky situation as safe as possible. I am also, in the most general sense, saying that if you wheeze, or if your doctor has prohibited you from diving (or learning to dive) and if you are going to go ahead and dive anyway, then you should consider the following suggestions.

First, don't deceive yourself. Asthmatics can, and probably do, have serious problems. The British researchers may not have heard from divers with serious asthma because they may not have been around to respond. So admit to your doctor that you want to dive. Get your personal physician to refer you to a diving doctor or pulmonary specialist for evaluation with any or all of the sophisticated, appropriate diagnostic techniques available. Alert your dive instructors that you are asthmatic. Tell them about any medications you are on. Give them the facts.

Second, since the British investigation revealed that upper respiratory infections, pollen allergies, exercise and cold air all precipitated wheezing attacks, you must, as the Greek philosophers

An Anecdote

A businessman was standing at the window of his 97th floor office in the Empire State Building one day. All of a sudden a window washer, who had obviously fallen off his scaffolding some floors above, came rocketing by on his way toward the ground. Hearing the window washer chuckle, the businessman asked, "How can you laugh at a time like this?" The window washer said, as he dropped out of sight, "This is real fun and I haven't hit yet!"

Physicians, who know the disturbing secret (we may not always know what to tell our patients) may only be comfortable with the most conservative of recommendations: if you wheeze, don't dive.

Physicians who know the other secret (patients will do what they want to in spite of us) may feel the best we can do is emphasize that every time a "wheezier" dives, it is like jumping off the Empire State Building—if you haven't had problems, you just haven't hit yet.

The reason I tackled this difficult, humorless topic was to say, "If you are going to jump off the Empire State Building, I hope these suggestions help you parachute to safety."

TABLE 1

Number and percent of total DAN non-emergency calls requesting information about asthma and diving

YEAR	TOTAL CALLS	ASTHMA & DIVING INQUIRIES	PERCENT
1986	547	89	16.3%
1987	766	122	15.9%
1988 (Jan-Mar only)	(327)	(47)	14.4%
1988 projected		(268) (at 14.4% rate)	

said, "Know thyself." Become familiar with your wheezing, know when you are sick, be aware that you are intolerant to exercise and stay alert to wheezing induced by cold or dry air. Don't even attempt to dive if you are having a respiratory problem or any sort. Treat all infections immediately. Use appropriate antihistamines and decongestants for your allergies before you dive and don't push yourself by overworking during any dive.

Third, if you are resolved to dive while on prescription medication (such as cortisone, chromalyn sodium or bronchodilators) you should be ultraconservative and not dive until you have been free of all wheezing for a minimum of 48 hours.

TABLE 2

Response of divers with asthma when asked how soon after wheezing they thought it was safe to dive:

Safe to dive after:	No. of Respondents
1 hour	9
2 hours	7
12 hours	5
24 hours	14
Subtotal	35 (34%)
48 hours	8
1 week	4
2 weeks	2
1 month	1
Did not know	54 (52%)
Total	104 (100%)

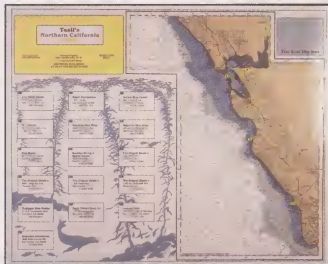


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DOMINICA

(Continued from page 43)

ly. All this in 20 feet of water!

Generally speaking the best diving areas are 30 minutes or less from either resort toward the southeast and southwest end of the island near the area known as Scott's Head. The boat trip is scenic and pleasant across flat, clear water with a mountainous backdrop of Dominica's thick jungle forest spotted by a few picturesque fishing villages along the way.

Diving Dominica's warm, clear, tranquil water you will find a spectacular array of sponges and small fish life. In a number of caves and archways you can glide through thick schools of soldier fish providing photographers with great wide angles and macro opportunities! Dropping over the wall at the site known as *LaBim* you look down a vertical drop of some 800 feet. The wall is literally covered with large barrel sponges and soft and black coral formations. I saw at least three species of angelfish along this reef which runs for nearly two miles.

Another favorite spot *The Pinnacle* is an area which offers both shallow water activity or spectacular drop-offs just a few feet away. This is one of those spots where you cannot decide whether to shoot macro or wide angle. Oh well, you win either way—it's all there! *Point Guinard* is a shallow reef that makes an easy second dive by day and a simply unbelievable night dive. There is a cave that can be explored without the normal cave paraphernalia as it does not go very far back and you never lose sight of the entrance (that is, not until you move the hundreds of trumpetfish around that spend the night there). Close by are two more spots which make incredible night dives. One is near a hot springs which sends hot bubbling water from cracks in the ocean floor. Sounding like small jet engines this spot attracts a myriad of marine life. I saw the unusual snake eel, which if prodded just a little, will slide his four-foot body out of hiding, swim a few yards, then with his tail, dig a hole long enough to harbor his entire body all in about 10 seconds. Great on video.

An especially nice diving spot where you can also snorkel or go ashore for a hike and lunch is Scott's Head Lookout. There you can see for miles with the tranquil Caribbean on the west and the rugged Atlantic on the east. Only a slim stretch of land separates the two oceans. The scenery is spectacular!

What about the rest of the island for diving? I was most anxious to dive the rugged Atlantic side of the island, and also the north end, as they are rarely visited. The weather tends to be a little

more unpredictable, and as I found out, can be extremely rough. For these trips I went with the dive operator from the Anchorage Resort, Fitzroy Armour. Fitzroy is also a safe and skilled dive instructor but with a bit of the adventurous Viking in his blood. Armed with extra tanks, a solid dive plan, plenty of fuel, and a fast boat, we struck out several times for the far northeast end of the island.

Most of our attempts were hampered by what I call big waves. When we were unable to make the northeast side, we settled for the northwest end which was quite good diving with bigger fish, large sponges and virtually untouched territory. The few days we were able to reach the northeast side were exciting. The diving was a combination of walls, cuts and canyons with large schools of pompano, huge barracuda, nurse sharks and pelagic jacks. I would not recommend diving this area if you are susceptible to motion sickness, are a less experienced diver, or have a limited time to dive. It is not so much that this area is dangerous, but it can be rough and the long boat trip takes away a lot of dive time if you're unable to make the location you planned on diving.

During my stay on Dominica I had the pleasure of diving with several groups of people from all over the world. Mark Hanson, a "Doc" from U.C. Santa Barbara had the unforgettable experience of diving one morning with a humpback whale and her baby. For several days we saw humpbacks along the coast, and although we were not able to swim with them, we were completely content to listen to their singing on a video, taped during a number of our day and night dives.

It is of small wonder that this uninhabited island paradise was selected for a feature part in a recently published book titled *The Ten Most Beautiful Islands in the World*. Dominica is a place where tourists can escape tourism and is probably the best kept secret in the Caribbean. \$

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experience a visual extravaganza by visiting the Algonquin Hotel. My son stayed in Eastport the day we made that trip, but after seeing the pictures of the Algonquin he was mad that we hadn't stayed there. The hotel is more than impressive!

The upper reaches of Maine combined the best of both worlds for my wife and me. We had a real travel vacation with just a little diving involved—an extreme change from our usual dive trip with a little sightseeing on the side. My once-a-day dive lasted about two hours each day. The remainder was *our* time, a necessary ingredient for couples who don't both dive.

The week was so enjoyable that we plan to head north again this year. I've heard stories of scallops in Canada that are so big, four would yield a pound of meat. I've also viewed a video which featured a romp with seals in Acadia National Park. Both notions get the old adrenalin pumping. Whichever I choose, I know it will be a real pleasure.

Two songs drift through my mind when I recall the upper reaches of Maine. One typifies my feelings of the land and its people. It begins "Grandpa, take me back to yesterday..." The other adequately describes the fairyland beneath the sea "...in a land called Honalee." **\$**

SNORKELERS

(Continued from page 38)

extensive rock jetty almost a quarter of a mile long. The jetty offers an excellent place to study marine life. Plant and animal life is protected, which probably contributes to the unbelievable variety and abundance of fish.

Destin offers a number of shallow water spots for snorkelers. The local dive shops can tell you how to get there and what to expect concerning sea conditions. Popular spots include the Destin Bridge, Crystal Beach pier pilings and East Past Jetties. Be prepared for a special treat when exploring Gulf waters where you'll find thick schools of baitfish, sand dollars, stone crabs and swarming tropical fish.

For snorkeling near Pensacola, try Fort Pickens located in the Gulf Islands National Seashore. You'll find gorgeous beaches, brilliant tropicals and a nice variety of shells.

Swimming from the beach is not the only way to find remarkable underwater sights in Florida. Traveling from the Panhandle into the northcentral part of the state there are hundreds of major springs, sinks and spring-fed rivers to explore. The sparkling clear waters offer some of the best freshwater adventure in the world.

In most cases, you don't need a boat for snorkeling the springs. What you might consider is a wet suit. The water temperature is cool and varies between 68 and 78 degrees.

When it comes to first-class springs, Florida has 17 of the top 75 springs in the United States. How is a spring rated? It depends on the amount of water and how fast it is flowing from the ground. Florida's magnificent springs discharge 100 cubic feet of water a second. Silver Springs, located northeast of Ocala, is the world's largest and Wakulla Spring near Tallahassee is the deepest.

What can you expect to see in fresh water? Imagine watching friendly, fat bass and bream swimming around in beautiful beds of seagrass. The number of fish in some springs is incredible.

The most popular springs in close proximity to the Panhandle are Morrison Springs and Vortex Blue Spring. Morrison Spring is a huge body of water bordered by beautiful moss-draped cypress trees. It is also an excellent area for camping. Both springs offer crystal water ideal for snorkeling.

Crystal River Spring near Tampa is known as one of the finest freshwater dive sites in the world. Here you must have a boat for snorkeling but there are several dive shops with boat shuttles to the spring. Crystal River is world famous for its manatees. The manatee is endangered and estimates indicate there are only about 1,200 remaining in the southeastern U.S. The chance to snorkel near one of these gentle giants is a rare treat.

Ginnie Springs, located near High Springs, about 20 minutes north of Gainesville, is probably the most visited spring in Florida. Located on a beautiful 200-acre wooded site near the banks of the Santa Fe River, it features about the clearest water you will find anywhere. Ginnie Springs is the largest spring in the area but there are five smaller springs located within the park. The clear water provides snorkelers an excellent opportunity to try underwater photography. The underwater setting is a panoramic view of waving eelgrass, friendly hand-fed fish, limestone shelves, caves and caverns. Decks have been constructed next to the springs and entering the spring is as easy as walking down a few steps and jumping into the water. When you visit, plan a picnic and stay the day. The grounds offer excellent camping facilities, boat rentals, nature trails and a variety of water sports.

If you have not yet sampled the underwater world of Florida, once you put on a mask and see the intriguing wonders in the waters below, you will quickly realize what you have been missing. **\$**



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